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UNIVERSITY OF ALBERTA

LONG-TERM EFFECTS OF INSECURE ATTACHMENT IN CHILDHOOD

BY

MARK L. GENUIS ©

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND
RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
DEGREE OF
DOCTOR OF PHILOSOPHY
IN
COUNSELLING PSYCHOLOGY
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July 22, 1994

DEDICATION

To my mother,
whose love and dedication throughout
the years makes all things possible.

ABSTRACT

The purpose of the present study was to test a causal model outlining the influence of childhood attachment on psychological adjustment in adolescence. A total of 138 adolescents (mean age = 14.54; 64 males and 74 females) along with their mothers and fathers, when available, formed the sample for the present study. Approximately 40% of the adolescents in the sample were from a clinical population and the remainder were from the community. Data were collected from the adolescents and their mothers and fathers on affective, cognitive, life history, and demographic variables. A latent variable path model was fit to the data wherein it was posited that childhood attachment is central to the development of psychological adaptation in adolescence. Two latent variables, Abuse (F1) and Isolation (F3), were posited to have mutually reciprocal and dynamic effects on a third latent variable, Attachment (F2) which resulted in a direct influence on psychopathology. Using an Arbitrary Distribution Least Squares method (ADLS), the model resulted in an excellent fit to the data (Comparative Fit Index = .984; average standardized residuals = .25), and all three latent variables were significantly intercorrelated ($p<.05$) as expected. Moreover, a single path from F2 to psychopathology was confirmed by a large path coefficient (.48). Further analyses revealed that F2 was identified by the following infant and childhood variables (up to the age of 10 years): 1) regular nonparental care, 2) neglect and parental rejection, 3) lack of touching and physical proximity, 4) threats of abandonment and harm, 5) physical abuse, 6) family instability, and 7) sexual abuse. Stepwise discriminant analyses revealed that the specific experiences in childhood did not discriminate among the types of pathology demonstrated in adolescence. The significance of the findings for a general theory of developmental psychopathology are discussed.

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CHAPTER 1

INTRODUCTION

The theory of attachment (Bowlby, 1969) draws on several lines of thought to create an integrated body of knowledge about human emotional development. Attachment theory is particularly concerned with the development of human emotions from a life span perspective (Ainsworth, 1991), hypothesizing that observable behaviour is directed by people's emotions, specifically in relation to important figures within their lives (Grossman & Grossman, 1991).

A recent and essential focus for the development of attachment theory is that of the long-term (i.e., lasting into the teenage years) implications of attachment. Theorists and researchers have hypothesized that insecure attachment patterns in infancy and early childhood are strong predictors of maladaptive behaviour and psychopathology in adolescence and adulthood (Ainsworth, 1991; Bowlby, 1982; Cicchetti & Howes, 1991). Others, however, have maintained that early childhood attachments are superseded by the effects of maturation and therefore are not related to long-term mental health (Goldsmith, Bradshaw, & Rieser-Danner, 1986; Lamb, 1984; Scarr-Salapatek, 1976). The issue remains unresolved, however, as there is presently a dearth of studies available allowing for the examination of the long-term effects of secure and insecure attachment patterns.

The issues of defining attachment and why we should study the long-term psychological effects of attachment patterns are addressed below. This chapter ends with a summary outline for this dissertation.

1.1 Defining Attachment

The definition of attachment (as yet unstated) adopted in the present study suggests that between infancy and the age of six years, children develop an intense affectional bond to primary caregivers (Ainsworth & Bowlby, 1991; Bowlby, 1982). Such a bond leads infants or young children to establish internal representations or working models of themselves, their primary caregivers, and themselves in relation to their primary caregivers (Ainsworth, 1989; Belsky & Nezworski, 1988; Bowlby, 1980, 1982; Cassidy & Kobak, 1988; Sroufe, 1988). If the emotional bond is positive and care is consistent, the working models develop to be positive and a secure attachment is attained (Ainsworth, 1989; Ainsworth & Bowlby, 1991; Bowlby, 1982, 1988). This foregoing definition of attachment is consistent with that used in numerous other works examining various aspects of attachment and attachment behaviour (Ainsworth, 1991; Bowlby, 1982, 1988).

In order for research to to be conducted and attachment to be measured, Bowlby (1969) and Bell and Ainsworth (1972) operationalized this definition of attachment and drew a distinction between attachment behaviour and attachment. Attachment behaviour was measured by the willingness of the infant or young child to seek the proximity of his or her primary caregiver. The security of attachment was then inferred through the observation of specific behaviours. The importance of the consideration of the internal system has been underscored by Ainsworth (1989) who argued that the behavioural system includes not only its outward manifestation but also an inner organization, presumably rooted in neurophysiological processes. Such processes are subject to change because, although they are generally under genetic guidance, they are sensitive to environmental influences. Ainsworth (1991) argued that as inner organization changes in the course of development, so too does the observable behavioural manifestations and the situation in which they are evoked (see chapter 2 for a more complete discussion).

1.2 Long-term Implications of Attachment

Among the research conducted and the supporting evidence gained, there is a dearth of quantitative data bearing on the effects of attachment on infants and children as they pass through adolescence and enter adulthood (Ainsworth; 1989; Bowlby, 1988; Kobak & Sceery, 1988; Kobak, Sudler, & Gamble, 1991). Thus much more research is needed to examine the long-term psychological consequences of childhood attachment. In the research conducted to date, a moderate relationship has been found between the nature of childhood attachment and long-term psychological adjustment (Kobak & Sceery, 1988). Bagley and King (1990) noted that for adults who were sexually abused as children, thus disrupting attachment patterns, the long-term effects are based on reactions which emerged in childhood and continue to mar their adjustment.

The present study was designed to explore further the parameters and effects of attachment security in childhood (the first 10 years of life) on adolescent psychological adaptations. Results from the study may enable effective prevention and treatment programs to be established in order a) to aid prospective and present parents to be aware of the psychological needs of their young children so as to increase the probability of their children to function in a healthy manner later in life, b) to provide early identification of children at high risk for future psychopathology which may lead to the development of appropriate prevention measures or programs, c) to determine if specific variables (e.g., child sexual abuse, residential dislocation, and daily separation from a primary caregiver) which indicate a disruption in the attachment of the child to the primary caregiver can be linked to adolescent psychopathology, thereby providing a more complete understanding of developmental psychopathology which can be used to improve treatment programs of children in such environments, and d) to prevent a possible cycle of insecurity and subsequent psychopathology from being completed through therapeutic, educational, and social programs. For example, the educational system could provide a model of prevention of future disturbances within children by educating future parents in a preventive manner. Support for such an intervention was made by Bagley and King (1990) who emphasized that for many individuals, adolescence may be the only time when intervention and treatment can prevent a cycle of maltreatment, abuse, neglect, and other more subtle precursors of insecure attachment from occurring in their offspring. Bowlby (1988) and Steele (1986) argued that abusive parenting can often be traced back through numerous generations. Accordingly, a systematic empirical investigation may provide insight into what factors predict and underlie the occurrence of such pathologic child rearing practices and what it is about such experiences that leads to subsequent psychological harm.

1.3 The Purpose of the Study

The question which is examined in the present study is "Does insecure attachment prior to 10 years of age significantly predict psychopathology in adolescence?" Moreover, "To what extent can a latent variable path analysis help to explicate 'causal' links between early attachment and adolescent psychopathology?" Examination of these questions has implications for the prevention of some psychological problems that last at least into adolescence as well as treatment of problems that may arise.

Specifically, the present study was designed to assess a sample of both normal and clinical adolescents on demographic, life history, and psychological variables. Employing structural equation modelling as well as descriptive and other multivariate analyses, the intention was to assess the adequacy of a latent variable path model to fit the data.

Latent variable path analysis is a statistical procedure aimed at specifying causal relations of constructs as posited by theory (Anderson & Gerbing, 1988), and can be conceptualized as a hybrid of path analysis and factor analysis (Kline, 1991). Latent variable path analysis techniques allow for the simultaneous identification of both latent and measured variables as well as their residuals, intercorrelations, and path coefficients. Accordingly, such an approach reflects a new significant advance in statistical theory that allows for confirmatory and "causal" analyses to be conducted for a complex model (Bollen, 1989).

1.4 Chapter Outlines

The second chapter of this dissertation contains a review of the findings from the literature on attachment theory and a presentation of three questions to be addressed in the present thesis. Chapter three describes the Pilot study which was completed to assess the validity of the inferences drawn from the data and information yielded by the Adolescent Attachment Survey (AAS), developed for the present research. Chapter four contains the methods and results for the main study. The findings are reported in subsections and are supported by tabular presentations. Chapter four ends with an evaluation of the three research questions outlined in chapter two. Chapter five presents a discussion of the findings, together with the limitations of the study, and ends with a conclusion and implications for future research.

CHAPTER 2

LITERATURE REVIEW

The focus of this chapter is on theoretical formulations and research findings based on attachment theory, beginning with a discussion of the definition of attachment originally provided by Bowlby (1969). The issues related to the development of attachment behaviour as well as identified patterns of attachment and the long-term implications for these patterns are addressed. Finally, more specific and pertinent issues relevant to the thesis are examined. Because the focus of this work is on the effects on adolescents due to different types of childhood (prior to the age of 10 years) attachment, the importance of specific factors influencing the development of secure infant-caregiver attachments is underscored.

2.1 Definition of Attachment Behaviour and Attachment

The theory of attachment has as its key concept the behavioural system of individuals. An explanation of the enduring attachments that children and older individuals make to particular figures is made from these behaviours which are called attachment behaviours (Bowlby, 1982). Attachment behaviour is the indicator of the hypothetical construct, attachment.

The definition presented by Bowlby (1973, 1982) has been widely used in research in the area of attachment. Bowlby's definition of attachment behaviour also formed the basis of the Strange Situation test designed by Ainsworth and Wittig (1969). The Strange Situation test is an assessment procedure which has been used as the primary method of assessing infant and childhood attachments to caregivers (Sroufe, 1985).

2.1.1 Attachment Behaviour

Attachment behaviour has been defined consistently by numerous researchers (Bretherton, 1991). Researchers contributing to clarifying the distinction between attachment and attachment behaviour include Ainsworth (1969, 1972), Bischof (1975), Bowlby (1982), Sroufe and Waters (1977), and Bretherton (1980). Attachment involves the emotions of infants or children in relation to their primary caregivers. Attachment behaviour consists of the behaviour thought to result from attachment. The success or failure of these attachment behaviours is thought to have a direct impact on the child's attachment. Bowlby (1982), defined attachment behaviour as referring:

> to any of the various forms of behaviour that a child commonly engages in to attain and/or maintain a desired proximity. At any one time some form of such behaviour may be either present or absent and which it is, to a high degree, dependent on the condition obtaining at the time. (pp 371-372)

Based on the theory of natural selection, attachment theorists have posited that historically such behaviour has, and continues to have, survival value for the infant and/or child (Ainsworth & Bowlby, 1991). Proximity to the primary caregiver is sought by the infant who feels safe when the attachment figure is available. Infants and young children require the maintenance of such proximity because they have not yet developed the internal representational models (hereafter referred to as "working models") of their primary caregivers and therefore require frequent reminders of the caregiver's availability. Accordingly, the safety of the present surroundings is required (Sroufe, 1988).

As children develop secure and predictable models of the primary caregiver, themselves, and themselves in relation to the primary caregiver, they are able to sustain longer periods of time away from the attachment figure without experiencing distress (Bowlby, 1982). The children are able to trust the secure base of the models that have built up through numerous encounters with the primary caregiver (Weiss, 1991). An example of this is young children's exploring behaviour (Bowlby, 1982). Children are secure in exploring the surroundings as long as the primary caregiver is readily available. As children are able to trust that the caregiver will not abandon them, they explore their world further and for longer periods of time. A second example of the secure base has been demonstrated through the Strange Situation test (Ainsworth & Wittig, 1969), which has become the most commonly used procedure for assessing infant and childhood attachment to their primary caregiver. It has been consistently observed that infants and children who are securely attached to their primary caregiver exhibit various levels of distress upon separation from the attachment figure in a strange situation, but are not immobilized with fear as are children who are anxiously attached. Securely attached infants and children also consistently welcome the return of their primary attachment figure with joy. Subjects assessed as having insecure attachments demonstrate a variety of confusion, anger, and anxiety when reunited with their primary caregivers (Grossman & Grossman, 1991).

Along with attachment behaviour comes very strong emotions such as love, fear, anxiety, anger, and sadness. The specific emotions experienced by children depend on the proximity and safety attained through the availability of the primary caregiver (Bowlby, 1982). The emotional elements may be profitably discussed within the realm of the specific attachment.

2.1.2 Attachment

To say that a child has an attachment to, or is attached to someone, is to say that he/she is

> strongly disposed to seek proximity to and contact with a specific figure and to do so in certain situations, notably when he is frightened, tired, or ill. The disposition to behave in this way is an attribute of the child, an attribute which changes only slowly over time and which is unaffected by

the situation of the moment. (Bowlby, 1982; p. 371)

For a child to be securely attached to a caregiver, that child must feel safe and secure in that caregiver's presence. In this circumstance, the child will be motivated to initiate attachment behaviour when he or she feels threatened in any way. Along with the feelings of safety and security come intense feelings of love and joy (Bowlby, 1988).

According to this theory, an attachment to the primary caregiver develops between birth and approximately six months of age. At approximately six months of age infants are able to further demonstrate this preference as they are now better able to direct their attention as well as to seek the proximity of a specific individual or individuals (Ainsworth, 1973; Ainsworth & Bowlby, 1991; Belsky & Nezworski, 1988). Within the time period of the first six months of life, it is posited that infants are developing an intense affectional bond to their primary caregiver and increasingly direct their emotions toward that person (Ainsworth & Bowlby, 1991; Bowlby, 1982). The development of the bond is furthered when children elicit attachment behaviour and experience varying levels of success in maintaining proximity to the primary caregiver. Such a bond leads infants or young children to establish internal working models of themselves, their primary caregivers, and themselves in relation to primary caregivers (Ainsworth, 1989; Belsky & Nezworski, 1988; Bowlby, 1980, 1982; Cassidy & Kobak, 1988; Sroufe, 1985, 1988).

All infants, however treated, form an attachment to the persons who care for them (Ainsworth, 1973; Bowlby, 1969, 1982; Sroufe, 1988). It is the quality of the attachment relationship that varies depending on the quality of care experienced by the infant. If the emotional bond is positive and care is consistent, the working models will develop in a like manner, and a secure attachment will result (Ainsworth, 1989; Ainsworth & Bowlby, 1991; Main, 1991).

Sroufe (1988) argued that these early experiences, and the relationship to which they lead exercise important influences on later development.

Considerable attention has been paid to the influence of infant and child temperament on the development of attachment (Belsky & Nezworski, 1988; Lytton & Romney 1991). Bell and Ainsworth (1972) reported evidence confirming the influential role of the caregiver and the lability of development of infant temperment in the course of development of attachment security. They compared 26 infants and found that in the first three months of life, caregiver behaviours did not correlate significantly with how much a baby cried. By the end of the first year of life, however, mothers who had attended promptly to their crying babies had babies who cried significantly less than did the babies of mothers who had left them to cry ($r = .52$, $p<.01$). Therefore, with consistent demonstrations of care by the primary caregiver, the behaviour of the infant changed. Similar findings were reported by Moss (1967). Such findings are in direct contradiction to the theory of "spoiling" presented in traditional psychoanalysis (Freud, 1905). In fact, Ainsworth (1979) and Ainsworth and Bowlby (1991) explicitly argued that timely and appropriate close bodily contact does not "spoil" infants and does not lead them to become fussy and clingy; evidence suggests that the opposite phenomenon occurs (Bowlby, 1982).

2.2 Development of Attachment

Attachment theory postulates that children's ties to their mothers are the product of the activity of numerous behavioural systems that have proximity to the primary caregiver as the objective (Bowlby, 1982). Although the ontogeny of attachment behaviour is complex and individual differences are at their greatest in the first year of life, fairly typical attachment behaviour is exhibited by almost all children in the second year of life (Bowlby, 1982). Aside from the developing ability of children to explore their world in new ways at this age, it has been argued by Bower (1989) and Bowlby (1980) that children develop "person permanence" by the end of the first year of life and are therefore able to maintain an image of the primary caregiver longer than an infant under one year of age. This idea is analogous to the concept of object permanence espoused by Piaget (1972). It is important to note, however, that before the age of 16 to 24 months, the images themselves as well as the child's ability to maintain them are still quite unstable (Greenspan & Lieberman, 1988).

In assessing the quality of attachments of infants as well as describing infant moods in various situations, Greenspan and Lieberman (1988) used general descriptive categories of affective-thematic inclinations including: (a) interest and attentiveness; (b) relaxation and/or calmness; (c) dependency, including holding or comforting-type behaviours; (d) pleasure or joy, including enthusiasm; (e) assertiveness demonstrated by explorativeness and curiosity; (f) protest or other distinct forms of displeasure, including anger; (g) negativism or stubbornness; (h) self-limit setting, generally not seen until children are at least 18 months of age; and (i) after the age of three, empathy and more stable feelings of love.

In working toward a developmental approach to conceptualizing attachment patterns, Greenspan and Lieberman (1988) denoted five stages of development within the first 16 to 24 months of life.

The first stage is called *achievement of homeostasis*. This stage is described as self-regulation and emerging interest through the senses in the world; it is consistent with Bowlby's (1982) focus on control theory and its relation to the development of attachment. The infant strives for regulation and consistency in his or her world in order to find the caregiver within it to attach to. By the age of two to four months, the infant is more attuned and able to respond to interpersonal interaction, a skill which leads to the second stage of development.

The second stage is *forming a human attachment* and lasts to approximately eight months of age. If an effective or relatively pleasurable attachment is formed, the infant learns to distinguish caregivers from others and develops increasingly complex human interactions with such people, specifically with the primary caregiver. In doing so, causal relationships are established between the infant and the primary caregiver.

As the infant begins to develop the ability to explore his or her world, the third stage, *somatopsychologic differentiation,* comes into effect. The title somatopsychologic is used to indicate that the processes are occurring largely at the somatic level. Greenspan and Lieberman (1988) mentioned, however, that the psychological dimension is emerging and that the processes of attachment and differentiation are also occurring at this level. This means that the infant is gaining the capacity to hold conscious internal representations or symbols as a means of organizing experience. Blacher and Meyers (1983) argued that differentiation at this period of life is not so much between the infant and caregiver, but rather the differentiation of the primary caregiver from others. Hence, separation anxiety also emerges at this point. The infant is becoming increasingly conscious of the difference between the caregivers whom the infant feels safe with and knows are trustworthy and others (Ainsworth & Bowlby, 1991; Blacher & Meyers, 1983; Bowlby, 1982). This third stage lasts until the end of the first year of life.

As children enter their second year of life, they enter the fourth stage titled *behavioural organization, initiative, and internalization.* They display an increased capacity for forming original behavioural schemes (Piaget, 1972), internalization of imitative behaviour (Bandura, 1977), and the connecting of behavioural units into larger organizations (Ainsworth, Bell & Stanton, 1974; Sroufe & Waters, 1977). The connecting of behavioural units is evident in the exhibition of complex emotional responses such as affiliation, wariness, and fear (Greenspan & Lieberman, 1988). Therefore, the behavioural systems the child learned earlier in life appear to be taking an increasingly dominant role. Imitations take on a more integrated personal form, with the child applying these new systems to the world he or she is learning about at a rapid rate.

Although the capacity for the maintenance of internal representations and behavioural organization start out as unstable, between the ages of 16 and 24 months the internal representations appear to become a dominant mode of organizing the child's behaviour. Accordingly, the fifth stage in the development of attachment is titled *forming mental representations or ideas*. The mental images formed are now used as internal working models for behaviour by the child (Sroufe, 1988). Now that the child has attained person permanence and object permanence, the working models that have been forming as a result of the child's experiences become increasingly permanent and imprinted into the child's mind (Bowlby, 1969; Sroufe, 1988).

There are two difficulties with the term "stage" when describing the development of attachment. First, as Bowlby (1973, 1980, 1982) and Sroufe (1988) convincingly argued, attachment is not a "critical period" theory. Rather, it is regarded as a "sensitive period" theory. The concept of sensitive periods underscores the ability for change and development throughout life. The attachment theory hypothesis acknowledges the great importance of early attachment relationships and argues strongly that working models become increasingly set with age. However, as the critical period is believed to be between birth and six years of age from a psychodynamic perspective, the sensitive periods theorist argues that the internal working models are being formed throughout a person's formative years (Ainsworth, 1989; Bowlby, 1982), from birth to adolescence. Second, the term "stage" denotes an epigenetic phenomenon and implies the possibilities of regression and fixation. These concepts have been rejected by attachment theorists in favour of the description of developmental pathways (Ainsworth, 1991; Bowlby, 1982, 1991; Bretherton, 1991; Cicchetti, & Howes, 1991; Sroufe, 1988). The concept of epigenetic stages also leaves little room for the discussion of individual differences by such attachment theorists as Ainsworth (1991) and Belsky and Nezworski (1988).

Spitz, Emde, and Metcalff (1970) concluded that "at all developmental levels, maturationally guided processes are turned into developmental processes as a result of the adaptations enforced by exchanges within the surroundings and the organism's response to them" (p. 431). They went on to argue that maturation is a useful concept, but that practically there is only development (p. 431).

Notwithstanding the limitations of stage theory, the observations of Greenspan and Lieberman (1988) are useful. An understanding of developmental pathways and the difference between critical and sensitive periods is, however, essential if it is to be understood how the stages outlined by Greenspan and Lieberman (1988) correspond to the development of attachment in early childhood.

Human psychological development is hypothesized to progress along a large number (perhaps infinite) of potential pathways depending on an equally large variety of factors, the most important of which is the relationship the infant has with his or her primary caregiver. Theorists have categorized these patterns into two main types: secure and anxious attachment, with anxious attachments being subdivided into ambivalent, avoidant, and disorganized/disoriented types (Grossman & Grossman, 1991).

2.3 Patterns of Attachment

In the original work examining the child's tie to a primary caregiver, Ainsworth (1963) observed the development of the infant-caregiver relationship in a sample of 28 unweaned Uganden babies and their mothers. She was particularly impressed with how the children used their mothers as a secure base from which to explore the world and as a haven of safety. As a result of the direct observation done on these subjects, Ainsworth divided the infants into the categories of securely attached, insecurely (anxious-ambivalently) attached, and nonattached (Ainsworth, 1963). In a follow up longitudinal study conducted in Baltimore, a formal procedure titled the Strange Situation Test was developed for assessing the attachment of infants to their primary caregivers (Ainsworth & Wittig, 1969). Through this project, Ainsworth found that the infants who were initially classified as nonattached were indeed attached but in a very insecure way. These infants were subsequently assessed as having anxious attachments of the avoidant type (Ainsworth, Blehar, Waters, & Wall, 1978).

Although the inclusion of the avoidant category helped to explain the attachment of a higher percentage of the children, there was still a portion of the subjects who remained unclassifiable in the present secure, ambivalent, and avoidant categories (Main, 1991). In a recent review of the videocassettes of the Strange Situation behaviour of many infants considered unclassifiable in the above categories, Main and Solomon (in press) found that these infants displayed an array of disorganized and/or disoriented behaviours. Such behaviours included the freezing of all movement, or exhibiting stereotyped movement in the parent's presence (Main, 1991). This work led to the identification of the disorganized/disoriented attachment pattern (Main & Solomon, in press).

Infants assessed as securely attached are titled Group-B infants in Ainsworth's system of classification. Group-A infants were those assessed as having an anxious-avoidant attachment to their primary caregiver, and Group-C infants displayed anxious-ambivalent attachments (Ainsworth et al., 1978;

Bowlby, 1982). Main and Solomon (in press) classified Group-D infants as those displaying disorganized/disoriented attachments. Groups A, C, and D infants are all considered insecure attachment classifications.

2.3.1 Secure Attachment

Securely attached infants appear confident that their primary caregivers are available, responsive, and helpful should they encounter any adverse experiences or frightening situations. With such assurance, children feel confident to explore their world as the security of the protector is reliably present. This explanation of secure attachment has been identified consistently throughout the literature by a variety of researchers (Ainsworth, 1991; Belsky & Isabella, 1988; Bowlby, 1988; Greenspan & Lieberman, 1988; Main, 1991; Matas, Arend, & Sroufe, 1978; Radke-Yarrow, 1991; Spieker & Booth, 1988). After a distressing or alarming event, Ainsworth et al. (1978) noted that securely attached infants also take great comfort in and are quickly soothed by close body contact with their primary caregivers. The speed of recovery mentioned certainly depends on the amount of distress the infant has experienced. Distress of greater intensity is followed by longer periods of contact.

Through the use of attachment behaviour at noncritical times, children test the availability of their attachment figures differently at different ages (Ainsworth et al., 1978). For example, a brief call or run back to the primary caregiver in the middle of play demonstrates that the child is developing internal working models of the primary caregiver and is testing out the model of an available, caring, and responsive caregiver that the child can use as a secure base to further explore from and retreat to in times of need (Bowlby, 1988). The positive responses of the primary caregiver to the infant and the child's attachment behaviours enable the growing child to develop positive working models as discussed earlier and, therefore to establish a secure attachment to the primary caregiver (Ainsworth &

Bowlby, 1991; Sroufe, 1988). Ainsworth (1979) concluded that timely and appropriate bodily contact does not "spoil" babies and make them fussy and clingy. In fact, such caregiving provides infants with the secure base and confidence that they can successfully explore the world and expand outward from the immediate surroundings. Bowlby (1973) argued that proximity seeking and the development of secure attachments in infancy and childhood are completely natural and appropriate. Attachment theorists have argued that attachment behaviour should be regarded as an instinctive behaviour holding an equal status to that of eating and sexual behaviour (Ainsworth, 1991; Ainsworth & Bowlby 1991).

2.3.2 Anxious Attachment

When infants or children consistently do not receive appropriate support from their primary caregivers after demonstrating attachment behaviour, they develop insecure working models (Ainsworth, Bell, & Stayton, 1971; Bowlby, 1982, 1988). A variety of displays of anxiety led to the breakdown of anxious attachment into three more specific categories: anxious-ambivalent, anxious-avoidant, and disorganized/disoriented. Each of these classifications are discussed below.

2.3.2a Anxious-ambivalent attachment. Children who are attached to their primary caregivers in an ambivalent way appear to be uncertain whether their primary caregivers will be available or responsive to the children's needs when attachment behaviour is displayed (Bowlby, 1988). Ainsworth et al. (1978) termed this classification as pattern C, and noticed through extensive home observations as well as assessments conducted through the Strange Situation procedure that such children oscillate between seeking proximity and contact with their primary caregiver and resisting such contact and interaction. The actual aggressiveness of the childrens' behaviour varies, but the pattern is consistent.

Infants in this category of attachment appear to experience considerable internal conflict. They continuously pursue the attention of their primary caregivers, becoming upset when their caregiver tries to engage them in play not involving the caregiver, but are not content or trusting of the caregiver and resist her or him when contact is made (Ainsworth & Eichberg, 1991). As a result of their being unsure of the support they can expect from their primary caregiver, Group-C infants are not able to use their caregivers as a secure base from which to explore unfamiliar surroundings and strange situations. Consequently, Group-C infants appear to have a greatly diminished sense of self-efficacy as compared to Group-B, securely attached, infants (Ainsworth et al., 1978).

Through observations of the mothers of 106 children observed in the Strange Situation as well as in home visits, Ainsworth et al. (1978) observed that mothers of Group-C infants were much less responsive to the crying and signals their babies elicited than were Group-B mothers. On the other hand, Group-C mothers were not rejecting of their infants as was consistently the case for mothers of Anxious-avoidant (Group-A) infants. Therefore, the expectation of the type of conflict internal to the child as well as the behavioural manifestations were expected and found to differ among the three groups of insecurely attached infants.

2.3.2b Anxious-avoidant attachment. Infants who are attached to their primary caregivers in an anxious avoidant manner demonstrate no confidence that they will receive care when it is sought. From the behavioural demonstrations of these children, they appear to expect rejection when they exhibit attachment behaviour (Bowlby, 1988). The emotional conflict of these children is more hidden than in the case of Group-C infants. Ainsworth et al. (1978) noted in their home observations that the separation anxiety displayed by

Group-A infants was similar to that of Group-C infants in many ways. Specifically, they both cried more and more frequently demonstrated separation distress than Group-B babies. The difference between Group-A and Group-C infants was demonstrated clearly in the Strange Situation procedure. In the separation episodes of the Strange Situation, Group-A infants displayed little or no separation anxiety (cried little or not at all) whereas Group-C infants demonstrated a great deal of separation anxiety. In the reunion episodes, however, Group-A infants avoided their mothers, a behaviour which was markedly different from either Group-B or C infants. Avoidance behaviour in these instances varied and included the infant blatantly ignoring the mother upon her returning to the room. This occurred in Group-A infants despite the mother's efforts to get the baby's attention. Another example of avoidance behaviour was demonstrated by infants who began to approach mother but then suddenly turned away or moved away from her. The third class of behaviour placed in the avoidance category occurred when the infants, having looked at or even greeted their mothers, averted their gaze, which was interpreted by Ainsworth et al. (1978) as interrupting or discouraging interaction between the infants and their mothers. It is important to note that in gaze aversion it is not the case that the infant's attention is diverted and they are looking elsewhere. The babies do not seem to be looking at anything in particular when they avert their eyes, and when it appears that they are looking at something, no particular interest is evident in their expression.

This avoidance behaviour was originally noted by Ainsworth and Bell (1970) to be similar to the detachment behaviour observed to result from major separation experiences. The avoidance behaviour was exhibited both during the separation itself and upon reunion. In some cases, it persisted long after the initial reunion (Bowlby, 1973, 1980; Heinicke & Westheimer, 1966; Robertson, 1970;

Robertson & Bowlby, 1952). Noting that the similarity in avoidant behaviour between Group-A infants and those having experienced major separations from their primary caregivers may be important. In her research, Main (1973, 1977) observed that mothers of infants later assessed as being in Group-A were rejecting of the attachment behaviour elicited by their children. One main method of rejection consistently recorded was that these caregivers rebuffed their infants' desire of close bodily contact. Main (1977) noted also that mothers of infants later assessed in Group-A tended to find close contact with their babies aversive, and were more frequently interfering in their pick-ups and more frequently used forcible physical interventions to back up their verbal commands. Such observations imply that the infant assessed as being in Group-A would have found close bodily contact with their mother to generally be an unpleasant experience. Main (1977) reported that mothers of Group-A infants tended to lack emotional expression when dealing with their babies as compared with mothers of Group-B infants. From the results of her work, Main (1977) hypothesized that the relative lack of emotional expressiveness characteristic of Group-A mothers was attributable to an effort to control expressions of anger.

In their meta-analysis of four studies conducted using the Strange Situation, Ainsworth et al. (1978) reported that 60 percent of the infants assessed were classified as being in Group-B, 18 percent were in Group-A, and 22 percent were in Group-C. Main and Hesse (in press) reported, however, that as many as 13 percent of the infants assessed using the Strange Situation procedure were not appropriately classifiable in the A, B, C patterns identified by Ainsworth (e.g., Ainsworth et al., 1978). A re-examination of the data led to the discovery of a third pattern of anxious attachment.

2.3.2c Disorganized/disoriented attachment. Infants assessed as disorganized/disoriented in their attachment to their primary caregiver constitute the most recently identified group. Those assessed as Group-D are observed as acting as though both the environment and the attachment figure are sources of threat to the child, thereby both constituting fear-eliciting stimuli. In such a predicament the infant is in a bind. To increase attachment behaviour would result in closer proximity to one of the sources of fear (Ainsworth & Eichberg, 1991). This dilemma results in a conflict between two quite incompatible behaviours. These are (1) to seek proximity to the attachment figure and (2) to avoid proximity with that same figure as she poses a threat. The behaviours elicited by the infant appear as a contradiction or inhibition of action, freezing as though there were no alternative solutions for the infant, or some other behaviour that is indicative of the fear and confusion being experienced by the child.

The behaviour elicited by the primary caregiver of Group-D infants is hypothesized as falling into either or both of two main categories. The first is threatening behaviour either directly or indirectly toward the infant. The second is frightened behaviour, which in turn is frightening to the infant to have a haven of security threatened (Ainsworth & Eichberg, 1991).

2.4 Factors Influencing the Development of Secure Attachment

The present section focuses on the developmental antecedents found to be responsible for the individual differences in attachment security as assessed in the Strange Situation when children are between 12 and 18 months of age. The prevailing theoretical notion is that it is the primary caregiver's availability and sensitivity to the child which leads to the development of a secure attachment. This concept was further outlined by Belsky and Isabella (1988) who wrote that caregivers who "perceive, accurately interpret, and respond in a prompt and appropriate manner to their infants' communications cultivate secure attachment relationships by providing an environment for the infant that is predictable and controllable, and which thereby promotes his regulation of arousal and sense of efficacy" (p. 42).

Contributions of the infant within the relationship are readily acknowledged and addressed in attachment theory (Belsky, Fish, & Isabella, 1991; Cicchetti, 1987; Frankel & Bates, 1990; Sroufe, 1985, 1988). The framework Bowlby (1969) initially proposed was that infants contribute to the development of the attachment relationship to the extent that their endogenously based behavioural dispositions influence the primary caregiver. That is, children's temperament makes it more or less pleasant or easy for adults to meet each infant's idiosyncratic needs (Belsky & Isabella, 1988). The main thrust of the influence and, therefore, responsibility is on the side of the primary caregiver as it is the caregiver who ultimately determines when and how interactions proceed within the relationship, at least until the infant has developed the capacity for mobility (Ainsworth, 1971; Ainsworth et al., 1978). The infant's temperament, therefore, is viewed in the context of playing a role in developing the attachment relationship with the primary caregiver, primarily in terms of how much it influences the caregiver in providing consistent, sensitive, and security-promoting care.

In the following sections, the topic of sensitive periods of emotional development as viewed from the attachment paradigm is discussed. A review of the literature highlighting the specific variables argued to act as antecedents in the development of attachment styles between children and their primary caregivers is presented.

2.4.1 Sensitive Periods of Development

The focus on working models and sensitive periods presents an alternative to two extreme perspectives on development. At one extreme, theorists and researchers argue that the quality of adaptation is primarily a product of present experience and current circumstances. Such a view relegates the influence of early life experience to a tertiary role as its effects are likely to be overturned by later experience (Kagan, 1982; Lamb, 1984). The other extreme is that of the critical period hypothesis. From the critical period perspective, one's personality, and thus subsequent lifestyle and behaviour, is fixed within the first few (often argued to be six) years of life (Freud, 1905). Emotional development is therefore believed to progress in a rigid, linear manner from this point.

The sensitive periods theorists compromise between these extremes and recognize a person's ability for continued change throughout their lives, while clearly acknowledging the entrenching of patterns based on increasingly well established working models that have developed as a result of the important relationships experienced throughout life (Sroufe, 1988). Working models are active constructions which are forged and changed over time, but such change does not merely occur from outside experience. New experiences are engaged from the internal framework of the existent models and thus change is an active rather than a passive process (Bowlby, 1982; Sroufe, 1988).

Babies are predisposed for attachment to their primary caregivers (Ainsworth et al., 1978). Once children develop steady internal representational models based on the degree of success or failure to achieve a secure state of attachment, future experiences are coloured by the representations and expectations of the now experienced individual. That is, future experience does not occur in a cognitive or experiential vacuum. Children's, and later adolescents' and adults', working models affect their perspective on every experience encountered. Therefore, there is a great deal of force on the side of continuity, in terms of the core features of the representational models, and only consistency and internal acceptance of the difference between outside experience and present models can affect change within the individual (Sroufe, 1988). But when are people most amenable or sensitive to change?

Bowlby (1980, 1982) argued that the sensitive periods of development last through a person's formative years, from birth through adolescence. Bowlby also acknowledged, however, that the younger the person, the more sensitive they are to change and to the development of secure attachments. The security of attachment is able to be assessed at least as early as 12 months after the birth of a child, which leads to the argument that the most sensitive period of development is within the first year of a child's life for it is then that attachment behaviour is first exhibited and responded to. With the discussion of the establishment of person permanence earlier in this chapter, it appears reasonable that these early experiences lay the foundation for the growth, development, consistency, and change of security of attachment and working models throughout the life of the individual. This foundation remains labile, although decreasing so, through children's formative years (Bowlby, 1982).

Harris and Bifulco (1991) concluded that this lability continues through adult life. They found that secure attachments later in life may help individuals alter their present attachment patterns and reformulate their internal representations of themselves, past figures of influence, and themselves in relation to these figures.

Sroufe (1988) argued, however, that even when such fundamental reformulation occurs later in life, early experiences retain their influence. This may be exhibited in a variety of ways. For example, a person may exhibit a tendency to resume the previous pattern in the face of a bereavement or other serious stress, or it may take the form of issues which remain salient within a person's life.

2.4.2 Antecedents of Attachment Style

In studying emotional development from a relational perspective, the researcher must determine what aspects of the critical relationship or relationships are important or necessary in promoting the development of secure childhood attachments. Bowlby (1982) focused mainly on the dyadic relationship of the primary caregiver and infant to determine those aspects of the relationship that promoted infant and child mental health. In doing so, Bowlby (1982) concluded that consistency and promptness in the responsiveness of the primary caregiver to the attachment behaviour of the infant are the main determining factors in the development of secure attachments in children. To test out this postulate, and challenge the doctrine of determined infant temperament (Kagan, Kearsley, & Zelazo, 1978), Bell and Ainsworth (1972) conducted a longitudinal study in which primary caregivers' interactions with their infants in home setting were observed. As explained earlier, results of the Bell and Ainsworth (1972) study demonstrated that promptness of the primary caregiver's response to infant crying within the first year of the infant's life was significantly related to the reduction in both frequency and duration of crying in the subsequent quarter of the infant's first year of life ($\underline{r} = .52$, $\underline{p} < .01$). Conversely, the frequency and duration of the infant's crying was not a significant predictor of primary caregiver's responsiveness. The responsiveness of the caregiver to the needs of the infant varies depending on the reason the infant was crying. Bell and Ainsworth (1972) found, however, that close physical contact was the most frequent intervention and the most effective in terminating crying. Belsky et al. (1991) reported that the result of such responsiveness on a consistent basis rendered the relationship between infant and caregiver increasingly positive. Consistency in responsive caregiving was also significantly more likely than inconsistent responsiveness to promote the development of a secure infant-caregiver attachment ($\underline{\chi}^2(1) = 4.48$, $\underline{p} < .05$). But what characteristics or factors promote (or hinder) the consistency and quality of caregiving in the infant-primary caregiver relationship?

Belsky et al. (1991) observed both mother-infant dyads and mother-father-infant triads in order to examine some of the possible criteria affecting the consistency and quality of primary caregiver (in this study the primary caregivers were the mothers) responsiveness to the child. Questionnaires were also completed by the subjects' parents in an effort to gather further information. Results from the Belsky et al. (1991) study indicated that factors outside the dyad of primary caregiver-infant significantly affected the relationship and the interaction between the two. These variables were (1) each parent's level of self-esteem, (2) high levels of interpersonal affect of both parents, (3) present family cohesiveness, (4) marital satisfaction before the birth of the baby, and (5) high involvement with the infant by both fathers (secondary caregivers) as well as mothers (primary caregivers).

Work by other researchers has identified additional antecedent variables that have demonstrated influence on the attachment style formed by the infant, both directly and as a result of the effect certain conditions have on the primary caregiver, thus affecting the infant-primary caregiver interaction (Belsky & Isabella, 1988). Maltreatment of infants and children (including sexual and physical abuse, neglect, deprivation, threats of abandonment, and threats of blame, such as "you are the cause of my drinking") has been regarded by numerous researchers and theorists to represent severe inconsistencies in caregiving which lead to the development of anxious attachment (Ainsworth, 1973; Ainsworth & Eichberg, 1991; Belsky & Nezworski, 1988; Bowlby, 1973,1980, 1982; Browne & Saqi, 1989; Carlson, Cicchetti, Barnett, & Braunwald, 1989; Cicchetti 1987; Cicchetti & Howes,1991; Crittenden, 1985; Genuis, 1991; Grossman & Grossman, 1991; Main, 1991; Sroufe, 1986, 1988; Violato & Russell, 1993; Youngblade & Belsky, 1989).

In his review of factors related to the development of children reared by persons other than their parents, Belsky (1986) argued that sufficient evidence existed to conclude that extensive nonparental care within the first year of life constituted a risk factor for developing anxious attachments. Since that time, empirical evidence has supported this conclusion. Belsky and Rovine (1988) studied 149 healthy firstborn infants (90 males, 59 females) of maritally intact, working, middle class families. Infant attachment was assessed with the Strange Situation test. Results demonstrated that significantly more infants who experienced extensive (defined as more than 20 hours per week) care from persons other than their primary caregiver demonstrated insecure attachments to their primary caregiver ($\underline{F}(1,41)=5.4$, $\underline{p}<.05$). Furthermore, Belsky and Rovine (1988) reported that boys who experienced nonparental care for more than 20 hours per week were significantly more likely to be insecurely attached to secondary caregivers (fathers) as well ($\underline{\chi}^2(1) = 4.44$, $\underline{p}<.05$). Age of entry into day care settings within the first year of life (one to three months, four to six months, seven to nine months) yielded nonsignificant differences in attachment style. These findings demonstrated the importance of the consistency of caregiving. This concept can be understood in terms of the development of internal working models, which require time and consistency to develop at least until the child is old enough to adequately maintain a working model of the caregiver. The findings reported by Belsky and Rovine (1988) are supported by other empirical investigations (Barglow,Vaughn, & Molitor, 1987; Jacobson, & Wille, 1984). The estimate of 20 hours per week on nonparental care must be considered only as a general working estimate and has not been substantiated by other work.

In his presentation of the theory of attachment, Bowlby (1982) discussed long-term separation from the primary caregiver as one of the most debilitating factors leading to insecure attachment. Long-term separation (argued by Bowlby to be as short as eight days) was so important in the theory of attachment, that the second volume of Bowlby's attachment trilogy was dedicated to threatened and actual separation from the caregiver, the child's natural responses (anxiety and anger), and the effects of the separation on the working models of the developing child. Bowlby (1973) argued that in the evolutionary framework, anxiety and anger are normal responses to threats of ongoing unavailability of the child's attachment figure. Such responses serve to alert caregiving behaviour on the part of the caregiver and therefore serve to regain and/or maintain proximity with the attachment figure. When the infant and attachment figure are separated, the infant goes through a predictable sequence of reactions. The sequence begins with protest on the part of the child in order to regain proximity to the caregiver. Unsuccessful in his or her attempt at eliciting the approach of the attachment figure, the child proceeds into a state of despair and often bewilderment. Finally, the child appears to become detached from the primary-caregiver, although the forming of an attachment to a new caregiver will not necessarily proceed immediately. Evidence has also demonstrated that detachment may be better described as the repression of the child's desire for proximity as opposed to actual detachment (Bowlby, 1973; Robertson, 1953, 1958; Robertson & Bowlby, 1952; Robertson & Robertson, 1971).

More recently, Schachar and Wachsmuth (1991) reported results from a study they conducted comparing 18 families with normal sons and 102 families with sons diagnosed with specific psychopathologies, including attention deficit disorder with hyperactivity (ADDH) conduct disorder (CD), mixed ADDH and CD, emotional disorder (ED), and learning disability (LD). Findings demonstrated that the boys in the ADDH, CD, ADDH + CD, and ED samples experienced significantly more prolonged separations from both their mothers ($\chi^2(5) = 7.0$,

$p<.05$) and their fathers ($\chi^2(5) = 7.6$, $p<.05$) when compared with the NC groups. The Schachar and Wachsmuth (1991) study provides empirical support for the theoretical position that prolonged separation from primary attachment figures (parents) leads to an increased likelihood of psychopathology in later childhood.

The length of separation experienced by children in the separation studies varied. Accordingly, through his empirical study with Robertson (1952), Bowlby (1973) proposed that one week of separation from the primary caregiver is long enough for children under the age of three years old to enter the stage of despair. The stage of despair includes children questioning their tentative working models, questioning their own self-efficacy, and repressing memories of and desires for proximity to their primary caregivers. As with the 20 hour time limit proposed for weekly absence from the attachment figure (Belsky & Rovine, 1988), the one week time frame provided by Bowlby must be considered tentative until such time as further research can confirm or disconfirm this estimate.

The final major factor influencing attachment security is that of loss of the attachment figure (Bowlby, 1980; Vaillant, 1985). Through an extensive review of the evidence, Bowlby (1980, 1983) presented the hypothesis that the type of attachment formed predicts or predisposes a person to either healthy or pathological mourning. Vaillant (1985) highlighted the increased likelihood for anxiously attached individuals to experience pathological mourning when he argued that "it is often painful to the point of mental illness to lose someone whom we have loved a little and hated a lot" (p. 60). The reason for this can be understood through the development of internal working models. In relationships where a child has been able to securely attach to attachment figures, a loving and consistently positive model of the figure, self, and self in relation to the attachment figure is developed. In the case of insecure attachment relationships, with distinct differences existing between each type of insecure attachment, the working model is one of inconsistency, doubt, pain, and desire. Bowlby (1980) argued that those who make anxious attachments (especially ambivalent attachments) are likely to have been intermittently and partially rejected by their parents. This means that they were intermittently and partially accepted also. As a result, the child still hopes for love and care and yet is deeply anxious lest he or she be abandoned or rejected further. When such a person experiences loss, the internalization of the attachment figure is not complete and the death is more likely to be interpreted as an abandonment or rejection.

Empirical support for this position is found in an excellent review and summary of the literature leading to the development of the theoretical perspective (Bowlby, 1980). Recently, further support has been provided by Ainsworth and Eichberg (1991) who used the Adult Attachment Interview (George, Kaplan, & Main, 1985) to assess attachment style of 30 women who had experienced loss of an attachment figure through death. In eleven of the cases, loss had occurred in childhood, before the subject had finished high school. Twenty of the 30 women were judged as having resolved their mourning. Results revealed that significantly more of the women who resolved their mourning than women who had not were assessed as having been securely attached to the lost person. Subjects who had not resolved their issues of loss were mostly classified as preoccupied with early attachments or dismissing of attachment ($\underline{\chi}^2(1) = 18.15$, $\underline{p}<.01$). Both of the latter classifications were categorized by Main and Hesse (in press) as insecure. This study was a replication of, and served to corroborate, the findings from the research presented by Main and Hesse (1989) as reported in Ainsworth and Eichberg (1991).

In a study of adults suffering bereavement, Parkes (1991) concluded that the majority of persons whose mourning takes a pathological course have prior reason to be regarded as vulnerable to deviant mourning processes. Such vulnerability factors included learned fear, learned helplessness, lack of trust in oneself, lack of trust in others, having a partner who is seen as dependent, being compulsively self-reliant, and being elderly and isolated. These patterns did not occur in isolation and interacted to influence the pattern of reaction to bereavement. With the exception to being elderly and having a dependent partner, each of the influential variables promoting vulnerability is typical of insecure attachment in childhood. In the Parkes (1991) study, subjects with the largest number of personality problems also reported the greatest number of detrimental parental influences. The differences were significant ($\chi^2(2) = 6.79$, $p<.05$). These findings provide support for the notion that attachment type appears to have an important influence on type of mourning (healthy versus pathological) and subsequent mental health (Ainsworth & Eichberg, 1991; Bowlby, 1980; Lieberman & Pawl, 1988; Parkes, 1991; Vaillant, 1985).

2.4.3 Summary

Numerous variables have been identified as having an important influence on the development and maintenance of secure attachment relationships. One of the main elements is that of consistent, responsive, and appropriate care of infants and developing children in order to meet their emotional requirements. Eleven specific variables have been identified as working to either enhance or impede the process and therefore are important to consider here as antecedents influencing the development of attachment style. These variables are: (1) consistency of caregiving, (2) physical contact, (3) each parent's level of self-esteem, (4) high levels of interpersonal affect of both parents, (5) present family cohesiveness, (6) marital satisfaction before the birth of the baby, (7) high involvement with the infant by both fathers (secondary caregivers) as well as mothers (primary caregivers), (8) child maltreatment (including sexual and physical abuse, neglect, deprivation, threats of abandonment, and threats of blame), (9) daily separation from the primary caregiver (defined as more than 20 hours of separation per week), (10) long-term separation from the primary caregiver (defined tentatively as eight or more days of separation), and (11) loss (through death, abandonment or any other reason).

Notwithstanding the supporting evidence, one major criticism of attachment theory is that, the long-term implications of varying attachment patterns may be negligible (Scarr-Salapatek, 1976). This topic is addressed next.

2.5 Implications of Attachment Security into Adolescence

Some attachment theorists posit that the type of attachment formed in infancy and childhood is likely to remain stable unless important changes come about within the life of the infant, child, adolescent, or adult (Ainsworth, 1991; Genuis, in press; Grossman & Grossman, 1991; Harris & Bifulco, 1991; Sroufe, 1988). Such beliefs in stability are largely assumptions, however, as few systematic studies have been conducted to verify the stability and consequences of infant childhood attachment. In the following sections, the long-term implications of the different attachment types are reviewed.

In comparison to secure attachment strategies, insecure attachments involve alternative patterns of interaction: an avoidant, an ambivalent, or a disorganized strategy. Grossman and Grossman (1989, 1991) argued that these differences, even if relatively minor, appear to make a difference in the quality of a person's emotional life. When under pressure or stress, persons using insecure attachment strategies may turn out to be more susceptible to psychological ill-health. This vulnerability depends on an intricate interplay of the quality of the working models and the social-emotional support experienced by the individual in the present and current emotional stress. The specific type of psychopathology developed, if any, may also depend on the delicate interplay of these variables. It has been argued by both Wiess (1982, 1991) and Bretherton (1985) that attachment beyond childhood is reflected in the continuity of the working models that have developed within the individual.

Numerous longitudinal findings have supported the notion that chronic problem behaviours in childhood portend future problem behaviour, emotional instability, and delinquency in both adolescence and adulthood (Olweus, 1979; Robins, 1966). The underlying cause(s) of these deficits in emotional stability, however, have not been adequately addressed. Theoretically, because attachment classifications and related behaviour have been consistently found to remain stable throughout childhood (Ainsworth & Eichberg, 1991; Arend, Gove, & Sroufe, 1979; Bowlby, 1973, 1980; Easterbrooks & Lamb, 1979; Genuis, 1994; Grossman & Grossman, 1991; Main, 1991; Matas, Arend, & Sroufe, 1978; Waters, Wippman, & Sroufe, 1979), it is logical to hypothesize that attachment type is a strong predictor of psychopathology in adolescence.

For current purposes, long-term is defined as lasting into adolescence, or the teen-age years of a person's life. Accordingly, the review which follows focuses on adolescent attachment. The first section of this review of the studies examining attachment in adolescence includes those studies specifically focussed on assessing the stability of attachment from childhood through to adolescence. The second section includes studies assessing attachment in adolescence without considering childhood attachment. Following the review, a summary of the findings is presented along with a discussion considering methodological issues and suggestions for future research.

In each of the studies conducted, the main comparisons were made between the behavioural and affective/cognitive consequences of the attachment of subjects to their parents. Therefore, the focus of the review was on examining the differences in the outcome of secure and insecure attachments to people likely to have served as the primary and secondary caregivers in the lives of the subjects.

2.5.1 Attachment Stability from Childhood to Adolescence

In a retrospective study, Kobak and Sceery (1988) examined university subjects to assess whether childhood attachments were or were not associated with differences in affect regulation. Representations of self and others were also tested. Self-report measures, including the Adult Attachment Interview (George et al., 1985), were used to gather data on perceptions of self and others. The results revealed that subjects assessed as having a secure attachment to a primary caregiver in their early childhood were rated by peers as more ego-resilient ($F(1,49)=47.3$; $p < .001$), less anxious ($F(1,49)=4.7$; $p < .05$), and less hostile ($F(1,49)=12.9$; $p < .001$). These subjects also reported significantly higher levels of social support in late adolescence than subjects assessed as having had an insecure attachment to a primary caregiver in their childhood ($F(5,45)=4.0$; $p<.01$). The group sampled by Kobak and Sceery (1988) consisted of university students and thus generalization from their work is quite limited.

Serbin, Peters, McAffer, and Schwartzman (1991) conducted two longitudinal studies of females assessed as aggressive, withdrawn, and aggressive-withdrawn in childhood. The first study consisted of data gathered from 853 female children. The second study focused on a data set from 38 adolescent females. Serbin et al. (1991) attempted to draw a connection between childhood patterns of aggressive and/or withdrawn behaviour and later gynecological problems suggesting problematic sexual activity, adolescent pregnancy, teen parenting, and subsequent home environment. Both studies were conducted in Montreal.

Although no direct measures for emotional attachment to caregivers were obtained, the behaviour patterns observed by Serbin et al. (1991) have been proposed as an indication of attachment by many theorists (Bowlby, 1982; Cicchetti and Howes, 1991; Radke-Yarrow, 1991; Rubin and Mills, 1991).

In the first study, school children in grades one, four, and seven were assessed using the Pupil Evaluation Inventory (PEI), a peer nomination instrument measuring aggression and withdrawal (Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976). To be assigned to either of the aggressive ($\underline{n}=198$) or withdrawal ($\underline{n}=220$) group, children had to score high on one of the dimensions of aggression or withdrawal ($\underline{z}>1.65$) and low on the other dimension ($\underline{z}<.68$) of the PEI. Those children who registered z-scores above the 75th percentile on both the aggressive and withdrawal dimensions of the PEI were assigned to the aggressive-withdrawn group ($\underline{n}=238$). A contrast group ($\underline{n}=1117$) was comprised of children whose z-scores fell between the 25th and 75th percentiles on both aggressive and withdrawn dimensions.

Medical records of the female subjects were examined for a six year period. The final sample for whom medical records could be obtained was 853 females. Risk ratios (RR) were calculated with each of the of six reproductive outcomes (pregnancy, birth, pregnancy termination, birth control, gynecological problems, and sexually transmitted disease) within each of the three initial age groups (grade 1, 4 and, 7).

Results demonstrated that women initially assessed as aggressive in grade one were significantly more likely to have gynecological problems and to be using birth control between the ages of 11 and 17 years than were subjects in the contrast group (Risk Ratio test statistic = 2.04 and 2.55 respectively, $\underline{p}<.05$). Women assessed as aggressive in grade four were significantly more likely than subjects in the control group to have contracted at least one sexually transmitted disease (RR = 1.54, $p<.05$) between the ages of 14 and 20 years. Subjects of the aggressive group first assessed in grade 7 had significantly higher rates of pregnancy, use of birth control, and gynecological problems between the ages of 17 and 23 years (RR=1.36, 1.25, and 1.19 respectively, $p<.05$).

For women assessed as being aggressive-withdrawn in grade one, a review of their medical records demonstrated that between 11 and 17 years of age significantly more of these women than those in the control group were using birth control and/or had gynecological problems (RR = 1.75 and 1.65 respectively, $p<.05$). In the aggressive-withdrawn sample of females assessed in grade four, significantly more subjects presented with pregnancy and childbirth when the women were between 14 and 20 years of age (RR = 2.05 and 2.56 respectively, $p<.05$). The withdrawn group did not emerge as being significantly more at risk then the contrast subjects for reproductive outcomes.

From the results of study one, Serbin et al. (1991) concluded that childhood aggression in girls is a predictor of early, problematic patterns of sexual activity. The pattern demonstrated by subjects who scored high on both aggression and withdrawal in middle childhood is quite dramatic as 48 percent of these subjects became pregnant between the ages of 14 and 20 years.

The purpose of the second study completed by Serbin et al. (1991) was twofold. First they attempted to examine the home environment and parenting behaviour of a sub-sample of women from the previous study who had become mothers in their teens or early 20's. Second, they investigated any connections between mothers' aggression and withdrawal in childhood and early developmental progress in their offspring.

From the eligible subjects in the initial sample, 38 women agreed to participate in the second study. The mean age of the women was 22 years (SD=2.1) and the average age of their children was 24 months (SD=18) at the time of testing. Serbin et al. (1991) noted that the subsample was representative of the original group on aggression and withdrawal (means were close to the 50th percentile).

Serbin et al. (1991) conducted analyses predicting the developmental delay of the offspring of this sample of women. A regression equation included aggression, withdrawal, mother's age when she became pregnant, and child's age as predictor variables. The equation predicting developmental delay was significant (multiple $\underline{R} = .74$, $\underline{F}(4, 32) = 4.45$, $\underline{p} < .0001$), with all predictors demonstrating significance except for withdrawal. The authors concluded that mother's childhood social history has direct relevance for parenting and home environment. These results provide support for the hypothesis that childhood attachment is stable in the long-term, as the social environment Serbin et al. (1991) refer to may be related in an important way to childhood attachment. The sample size in the second Serbin et al. (1991) study was small and therefore the results must be interpreted with caution. There was also no direct assessment of childhood attachment and so the connection between this study and attachment theory is, at present, tenuous.

2.5.2 Attachment in Adolescence

Kwakman, Zuiker, Schippers, and de Wuffel (1988) examined the hypothesis that anxiously attached adolescents would have a greater risk of developing damaging drinking habits. The sample consisted of 161 (89 females and 72 boys) adolescent high school students in grades seven, nine, and eleven. Subjects ranged in age from 12 to 20 years (mean age = 13.4 years). The researchers reasoned that since alcohol can be used as a coping behaviour in stressful situations, anxiously attached adolescents may have an increased risk of developing damaging drinking habits, in contrast to securely attached adolescents who would feel a greater sense of efficacy and be more likely to turn to attachment figures for guidance.

Results of the study revealed that the quantity of alcohol use was significantly related to age ($F = 5.76$, $p<.05$). The average alcohol consumption of early adolescents (12 to 13 years of age) was 1.4 glasses which increased to 2.5 glasses in middle adolescence and 2.7 glasses in late adolescence. Alcohol consumption for the purpose of facilitating social contact was significantly related to attachment pattern ($F = 4.27$, $p<.01$). Duncan's multiple range test showed that adolescents with anxious or ambivalent attachment patterns endorsed this attitude of drinking significantly more than securely attached adolescents. Nonsignificant findings were found in relating attachment type with problem drinking, drinking attitudes, and drinking alcohol for personal effects. Sex differences were also found to be nonsignificant.

The authors concluded that those who are anxiously attached in adolescence (defined by Kwakman et al. as distrusting parental support, does not explore, and experiences a basic mistrust in social relationships) participated in alcohol consumption in order to facilitate social contact. The authors also stated that quality of attachment is not related to the amount of alcohol used or to problem drinking.

In another study examining the extent and function of parental attachment among college students, Kenny (1987) distributed self-report questionnaires to a sample of 173 (100 male and 73 female) first year college students in the United States. Most of the subjects in the study were Caucasian. In her study, Kenny noted the relevance of the secure base phenomenon and its relation to published empirical work that has documented the persistence of family ties into adulthood (Cohler & Geyer, 1982; Harris & Bifulco, 1991; Liotti, 1991; Main, 1991; Troll & Smith, 1976).

A principal component factor analysis was used to examine the relationship between the factor components of the parent relationship questionnaire, and self-reports of assertion and dating competence. Analyses were conducted separately for male and female subjects. Results yielded a four-factor solution for the female group (quality of relationship, parental role in providing emotional support, parental fostering of autonomy and, adjustment to separation) and a three factor solution for males (general attachment, which included items describing the quality of the parental relationship, perceptions of parents as a source of support, and parental fostering of autonomy, adjustment to separation and, parental protection and interference). The unit weighted factor scores were then entered in a stepwise multiple regression using the assertion and dating competence measures served as the dependent variable in separate analyses.

In the multiple regression analyses for the female sample, factor one (quality of relationship) and factor four (adjustment to separation) both significantly predicted high levels of self-reported assertion ($F(1,98) = 23.73$, $p<.001$ and $F(2,97) = 27.00$, $p<.001$). Only adjustment to separation significantly predicted dating competence ($F(1,98) = 6.74$, $p<.01$). For the male sample, factor 2 (adjustment to separation) was the sole factor that significantly predicted level of assertion ($F(1,71) = 8.67$, $p<.001$) and dating competence ($F(1,71) = 8.91$, $p<.001$). Kenny (1987) argued that the consistency of the influence with which the adjustment to separation factor has on assertion levels and dating competence implies that students who feel lonely and lacking in confidence are not likely to feel assertive or to experience feelings of success in establishing intimate relationships. In assessing the factors specifically describing the characteristics of the parent-child relationship, only the quality of the parental relationship was significantly correlated with the assertion measure. Lastly, the quality of parental relationship and the adjustment to separation factors were the best combined predictor of assertion, multiple ($F(2,97) = 17.01, p<.001$).

From the results of this study, Kenny (1987) argued that attachment provided a secure base of support and this was applicable for furthering the understanding of the strength of family relationships in adolescence. She noted that many of the subjects continued to turn to their parents as a source of help when needed and valued the help obtained as contributing to self-confidence. Parents were generally perceived by the subjects in this sample as being supportive of the independence of the subjects as well as being available as a source of support when needed. This is consistent both with the theoretical postulates of Bowlby (1973, 1982) and appears parallel with the attachment behaviour observed in infants having secure attachments (Ainsworth et al., 1978). Kenny also argued from the data collected that through close parental relationships with their children, the female subjects were able to overcome any societal pressure for women to be unassertive. The same was found for males, however they are not believed to have the same societal pressure toward unassertiveness. Interestingly, the significant relationship between parental relationship and assertiveness in subjects indicates that in both genders the influence of parents on their children has the ability to outweigh societal pressures, at least in the area of assertiveness, in both positive and negative dimensions. The final conclusion made by Kenny (1987) was that "popular views and psychological theory regarding the need to diminish parental ties need to be revised. Despite societal emphasis on the importance of becoming autonomous, an interdependence with the family members often persists at least through late adolescence" (p. 27).

Kenny (1990) further examined the extent and function of parental attachments among college seniors in relation to self-report measures of assertion, dating competence, and maturity in career planning. She also examined the data for any significant sex differences and differences between first year students and seniors. Subjects were 159 college seniors (102 women, 57 men) at an urban American university. Subjects were primarily Caucasian (90 percent). The results revealed that students viewed the quality of parental interactions as positive and viewed their parents simultaneously as fostering autonomy and providing emotional support. A correlation of .41 ($p<.001$) was found between the quality of attachment to parents and female students' ratings of the amount of help provided by parents. Also for the female sample, a correlation of .53 ($p<.01$) was found between the parental role in fostering autonomy and parental help in developing career plans. For the male sample, perceptions of parental help in developing career plans correlated .48 ($p<.001$) with parental role in fostering autonomy. Ratings for certainty of career plans correlated .34 ($p<.01$) with the quality of parental relationship. Nonsignificant differences were obtained in comparing first year and senior college students in a two-factor analysis of variance (ANOVA) with repeated measures on time.

The favourable manner in which this sample described their parents adds support to the earlier findings of Kenny (1987). The researcher argued that the way young adults achieve independence from their family of origin is through secure attachment relationships. Nonsignificant sex differences were found in comparing the way men and women described their relationships with their parents and in how they assessed their parents as fostering the subjects' autonomy. The results of this study support the earlier findings by Kenny (1987) and indicate that secure attachments throughout late adolescence lead to the development of independence and strong career decision making.

Armstrong and Roth (1989) argued that the connection between leaving home or loss of a love relationship and the onset and recurrence of eating-disorder symptomatology is well documented and that the connection can be explained clearly by attachment theory. They also argued that the recent exclusive focus in psychology on autonomy has made it difficult to get a full picture of the the role of attachment and attendant separation distress across the adaptive range. The authors pointed out the dearth of research examining healthy, mature styles of intimacy to recognize the difficulty of examining attachment issues in adulthood. Accordingly, the purpose of the Armstrong and Roth (1989) study was to examine the implications of Bowlby's attachment theory for eating disorders.

These researchers hypothesized that eating disorder patients would manifest anxious attachment and separation-based depression. The sample consisted of 27 women, 11 of whom had a primary diagnosis of anorexia nervosa, 12 with a diagnosis of bulimia nervosa, and the remaining four subjects with atypical eating disorders. The modal age of the sample was 20 years, and ranged from 17 to 43 years of age. Subjects were from relatively high socioeconomic status and education level (one-half were college students and another one-third were working at professional or skilled jobs). These demographic data are typical of the majority of eating-disorder studies (Armstrong & Roth, 1989). Control subjects were taken from previous studies with sex and educationally matched samples of subjects experiencing normal adult developmental issues apt to trigger separation distress (Kroger, 1985; Levitz-Jones & Orlofsky, 1985). The developmental issues were identity formation and the establishment of nonfamilial intimate relationships.

Nonsignificant differences were found between varieties of eating disorders as well as between age groups. This led the Armstrong and Roth (1989) to treat the clinical sample as a single group. Large differences were found between the percentage of eating disorder subjects and control subjects who demonstrated anxious attachment (96 and 27% respectively). Significant differences for the control group between the mild and severe separation pictures on the Hansburg's (1986) separation anxiety test ($p<.05$: test statistic not provided) whereas nonsignificant findings resulted for the eating disorder group. This finding indicates that the eating disorder subjects are not differentiating between mild, every day type separations, and relationship ending types of separations. This lack of distinction is inappropriate from an attachment theory perspective.

The authors concluded that a typical pattern emerges showing the eating disorder group as having "severe anxious attachment and chronic separation depression characterized by overreaction to minor separations and considerable self-blame, anger, and rejection as well as denial of the painful experiences" (p. 151).

The nonsignificant finding between age groups in this study lends empirical support to the notion of stability of attachment type throughout the lifespan. The clarity of definitions stand out as a strength in the Armstrong and Roth (1989) study. The lack of statistical information provided makes the findings suspect to some degree. The information provided lends empirical support for the theoretical notion that attachment type directly affects emotional development, and that those assessed as having insecure attachment to their primary caregivers are significantly more likely to develop psychopathology than people assessed as having secure attachment. It may have been useful to provide retrospective life history information aimed at assessing childhood attachment of the subjects to test the notion of the stability and effects of childhood attachments throughout adolescence.

Ryan and Lynch (1989) reexamined the construct of emotional autonomy, as proposed by Steinberg and Silverberg (1986), in adolescent and young adult samples. The argument proposed by Ryan and Lynch (1989) was that the measures of emotional autonomy and independence were invalid and that researchers were instead measuring emotional detachment from parents. The definition of detachment provided by Ryan and Lynch (1989) is consistent with that proposed by Bowlby (1973). Detachment was defined as representing loss and separation, wherein a person having an attachment to a caregiver is severed from a source of guidance, affection, or nurturance. Ryan and Lynch (1989) also argued that some forms of detachment from the family are associated with an experienced lack of parental support and acceptance, which is not conducive to independence and may actually interfere with the consolidation of identity and the formation of a positive self-concept. Steinberg and Silverberg (1986) followed the definition of emotional autonomy proposed by Douvan and Adelson (1966), who conceptualized emotional autonomy as the degree to which the adolescent or young adult has been able to cast off infantile ties to the family. Ryan and Lynch (1989) reexamined this construct of emotional autonomy, particularly with regard to how it was distinct from the issues of detachment and independence. They conducted three studies to do this.

In the first study, Ryan and Lynch (1989) hypothesized that insofar as emotional autonomy indexes detachment, it should correlate negatively with both felt security and emotional utilization of parents. The sample consisted of 148 seventh grade students in New York. The measures used in the first study were the Emotional Autonomy Scale (EAS: Steinberg & Silverberg, 1986) and the Inventory of Adolescent Attachments (IAA: Greenberg, 1982). The EAS is a 20-item self-report survey with four point Likert-type scales which is aimed at measuring emotional autonomy as defined by Steinberg and Silverberg (1986). The IAA is also a self-report questionnaire which was developed on the ethological-organizational perspective of attachment (Sroufe & Waters, 1977). The IAA uses a five point Likert-type scale for subject responses.

In examining sex differences, Ryan and Lynch (1989) reported that boys scored higher on the total EAS score ($t(146) = 3.8$, $p<.001$) and on three of the four EAS subscales: parents as people ($t(146) = 3.4$, $p<.001$), deidealization ($t(146) = 2.1$, $p<.05$), and individuation ($p<.05$, t-value not reported). No significant sex differences were found for the IAA on parental utilization dimensions. In correlating the EAS and the IAA variables, results demonstrated that the EAS is negatively correlated with felt security in the relationship to parents ($r = -.53$, $p<.001$). Further, the more individuated the adolescent was, according to the EAS, the less secure the subject felt with friends ($r = -.34$, $p<.001$). Ryan and Lynch (1989) reported results from an analysis of variance (ANOVA) which indicated significant group differences in attachment ($F(2,146) = 18.47$, $p<.001$). Post hoc analysis tests using Duncan's multiple range test revealed that avoidant subjects were significantly higher than either anxious (ambivalent) or secure subjects on the EAS, and males were higher than females ($p<.05$; statistical ratio not provided). Statistical significance was also found for felt security with friends ($F(2,146)= 9.47$, $p<.001$) which revealed significantly lower felt security among anxious (ambivalent) subjects than either avoidant or secure adolescents. Nonsignificant sex differences were found for this comparison.

The results of the first study were therefore consistent with the hypothesis that emotional autonomy would be associated with less felt security within the parent-adolescent relationship as well as with less utilization of the parent as a secure base by the adolescent. Ryan and Lynch (1989) noted that the absence of felt security among those high in emotional autonomy was particularly consistent with the reconceptualization of emotional autonomy as detachment. The researchers concluded that emotional autonomy as defined by Steinberg and Silverberg (1986) could be construed "in terms of a loss of a support and attachment rather than as a manifestation of autonomy" (p. 345).

In their second study, Ryan and Lynch (1989) endeavoured to examine the extent to which emotional autonomy was related to experienced parental rejection. Of the 213 suburban high school students who were the subjects for this study, 107 were female and 106 were male. The measures used to assess the degree to which emotional autonomy was related to felt rejection by parents were the EAS and the Mother-Father Peer Scales (MFP: Epstein, 1983).

Results indicated that a negative relationship existed between adolescent reports of parental acceptance and emotional autonomy. The findings were significant for the total EAS scores ($r = -.41$, $p<.001$) as well as for all four of the EAS scales (deidealization ($r = -.25$, $p<.001$), individuation ($r = -.39$, $p<.001$), nondependency ($r = -.18$, $p<.01$), and parents as people ($r = -.26$, $p<.001$)). Marital status was also found to be related to perceived parental acceptance, with subjects whose parents were divorced or separated reporting significantly less maternal ($r = -.19$, $p<.01$), paternal ($r = -.42$, $p<.001$), and parent total acceptance ($r = -.36$, $p<.001$). EAS scores were also found to be greater for subjects from families where the parents were either divorced or separated ($r = -.16$, $p <.05$).

The findings from the second study confirmed the hypothesis that emotional autonomy is positively associated with perceived parental rejection. Ryan and Lynch (1989) further argued that these results support the view that emotional autonomy can be interpreted as a problem with attachment with subjects high on emotional autonomy lacking a sense of their parents' love and acceptance. It may also be argued that subjects who score higher on emotional autonomy scales (specifically the EAS) are more often rejected by their parents. In the absence of longitudinal or detailed retrospective data, the direction of influence is not conclusive but a relationship appears to exist between parental rejection and emotional autonomy as measured by the EAS.

In their third study, Ryan and Lynch (1989) hypothesized that: (1) emotional autonomy, as defined by Douvan and Adelson (1966), would be negatively related to experienced emotional acceptance and independence support by parents; (2) emotional autonomy would be negatively related to self-esteem, self-perceived lovability, and greater individuation. On the other hand, (3) parental acceptance would be positively related to these variables and, (4) family cohesiveness would be negatively related to emotional autonomy as defined by Douvan and Adelson (1966). Those families experienced by the subject as cohesive, however, would be characterized by experienced parental acceptance and operationalized by communication of love and understanding.

Subjects for the third Ryan and Lynch (1989) study were 104 (41 male and 63 female) undergraduates drawn from a lecture course in psychology. Age of subjects ranged from 17 to 22 years. In addition to the EAS and the MFP, the Sources of Self-Esteem scale (SOSE: O'Brien, 1981), the Separation-Individuation Inventory (SII: Christenson & Wilson, 1985), and the Family Adaptability and Cohesion Evaluation Scales (FACES-III: Olson, McCubbin, & Associates, 1983) were used. Results demonstrated that emotional autonomy in this sample of young adults was inversely related to measures of family cohesion ($r = -.54$, $p<.001$), self-acceptance ($r = -.21$, $p<.05$), and independence support ($r = -.30$, $p<.01$). Finally, parental nurturance was negatively correlated with emotional autonomy ($r = -.58$, $p<.001$) and positively with perceived lovability ($r = .56$, $p<.001$) and self-esteem ($r = -.26$, $p<.05$).

In summary of the findings from the Ryan and Lynch (1989) studies, emotional autonomy was associated with less felt security and utilization of parents in young adolescents, greater perceived parental rejection (versus acceptance) in both mid-adolescent and young adult samples, and less experienced family cohesion and parental acceptance in young adults. It appeared that the interpretation of EAS scores as a form of autonomy is questionable. Evidence supporting the premise that emotional autonomy may be most meaningfully construed as emotional detachment resulting from the loss of developmentally appropriate attachments was provided.

2.5.3 Summary of Findings

From the foregoing discussion, a number of findings may be summarized. First, attachment was presented by Bowlby from an ethological perspective (Ainsworth & Bowlby, 1991) and has been demonstrated to be consistent across cultures. Second, attachment appears to remain stable from childhood through adolescence and into adulthood. Third, negative or anxious attachment is related to lowered self-esteem and perceived lovability in adolescence as well as to psychopathology and deviant behaviour. Fourth, parents appear to be the primary focus in the development of psychopathology and delinquency, and secure attachment to parents is instrumental to human development from infancy into adulthood.

There are numerous methodological issues which must be dealt with before conclusions can be drawn from the empirical findings. A discussion of these issues follows.

2.5.4 Methodological Issues

First, in some of the studies, attachment is not clearly defined and from the methodology and assessment instruments used, the framework from which the researchers were working is not clear (e.g., Kwakman, et al.. 1988). Accordingly, because there is presently a paucity of empirical literature directly assessing the stability of attachment from infancy and early childhood through to adolescence and adulthood, it is appropriate for researchers to present the definition of attachment they are using.

Some of the studies that deal with special populations have not employed appropriate control groups (Armstrong & Roth, 1989). This is an important consideration in such research in order to provide the adequate data to make within and between group comparisons on attachment security.

The majority of studies assessing older adolescents and young adults utilize college students as subjects. There is a need for research to be conducted with subjects who represent a more diverse group than university students as this group generally represents a more privileged segment of the population (Kenny, 1987, 1990; Richman & Flaherty, 1987). Representive samples are required before generalizations from the empirical findings can be made.

The Adult Attachment Interview (AAI; George et al., 1985) is a semi-structured interview which assesses childhood attachment styles across all four styles (secure, insecure-avoidant, insecure-ambivalent, and insecure-disorganized/disoriented), and has been demonstrated to relate significantly to attachment styles across generations (Main, 1991; Main & Goldwyn, 1984). It is, however, time consuming to administer and score. Researchers may be able to collect equivalent data as is gathered using the AAI in a more efficient manner by using a modified approach. Genuis and Bagley (1991) demonstrated that using computers for data collection in the social sciences can be an efficient and efficacious approach to gathering data commonly collected in personal interview and/or paper and pencil methods.

Most studies examining attachment in adolescence focus on this concept without considering the development of attachment from early childhood. Further research is required to test the hypothesis held by attachment theorists (Bowlby, 1982; Bretherton, 1991; Sroufe, 1988) that young children's attachments remain stable unless life circumstances change in important ways for the child (Vaughn, Egeland, Waters, & Sroufe, 1979). These authors have demonstrated the stability of attachment into childhood, but further support for such stability beyond this period is required.

In assessing the implications for attachment, focus should be placed on attachments to parents. Information needs to be assessed separately for each parent as well as for both parents together as a system. The reason for this is found in the arguments of Bowlby (1969, 1973, 1980, 1982) and Ainsworth and Bowlby (1991), where the attachment to the primary caregiver is hypothesized to be where a child's working models are established. The behaviour (internal and external) of the person is thought to be moulded according to the security of attachment in early relationships. Measures of attachment to peers (e.g., Armsden & Greenberg, 1987) serves as a confirmation of the belief that secure attachments affect peer relationships in a positive manner, but it does not indicate that the peer relationships in adolescence replace the importance of the earlier attachment to the primary caregiver. Empirical evidence supporting the notion of the importance of the adolescent's relationship with his or her parents predicting and influencing psychological health and peer relationships is abundant (Bachman, Kahn, Mednick, Davidson, & Johnston 1967; Burke & Weir, 1978; Coopersmith, 1967; Gallagher, 1976; Mortimer & Lorence, 1980; Offer & Offer, 1975; Rosenberg, 1965; Thomas, Gecas, Weigart, & Rooney, 1974). These reports, however, are epidemiological in nature and thus have not focused on the theoretical notion of emotional attachment of the child to the primary caregiver. Further research is required to clarify these findings.

2.6 Definition of Psychopathology

Psychopathology is generally regarded as a chronic mental disorder often associated with abnormal social behaviour. This may frequently include emotional instability.

The Diagnostic and Statistical Manual of Mental Disorders Third Edition - Revised (DSM III-R: American Psychiatric Association, 1987) defines psychopathology as

> a clinically significant behavioural or psychological syndrome or pattern that occurs in a person and that is associated with present distress (a painful symptom) or disability (impairment in one or more important areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom. In addition, this syndrome or pattern must not be merely an expectable response to a particular event; e.g., the death of a loved one. Whatever its original cause, it must currently be considered a manifestation of a behavioural, psychological, or biological dysfunction in the person. Neither deviant behaviour; e.g., political, religious, or sexual, nor conflicts that are primarily between the individual and society are mental disorders unless the deviance or conflict is a symptom of a dysfunction in the person, as described above. (p. xxii)

A descriptive approach to mental disorders is utilized in the DSM III-R in that the definitions of the disorders are generally limited to descriptions of the clinical features of the disorders. The reason for this approach is that the DSM III-R attempts to be atheoretical with regards to etiology. Partially as a result of this approach, the DSM III-R has become the most widely-used diagnostic classification system in North America. The descriptive approach taken and the definition proposed in the DSM III-R are appropriate both for diagnostic and research purposes. However, the diagnostic categories listed within the DSM III-R describing developmental disorders and personality disorders in children and adolescents have not been developed through the use of empirical investigation and observation of children and adolescents (Achenbach, 1991a). This is an important shortfall of the DSM III-R as any research conducted utilizing its criteria for classification of child and adolescent subjects cannot assure reliable or valid classifications. Achenbach (1991b) argued that the DSM categories have not been adequately validated and are not operationally defined according to any particular assessment procedures. The DSM III-R is also scheduled for updating in the near future and therefore classifications based on the use of the DSM III-R may soon be considered erroneous by official administrative standards. The definition of psychopathology presented in the DSM III-R is consistent with that presented by authors in the area of psychopathology (Cicchetti & Howes, 1991), but the problem of producing an operationalized definition of psychopathology for the purposes of data collection remains.

To operationalize the concept of psychopathology in the present study, the Youth Self-Report (YSR: Achenbach, 1991b), the Child Behavior Checklist (CBCL: Achenbach, 1991a) and clinical assessments of subjects were used. Both the CBCL and the YSR were developed through direct empirical investigation of children and adolescents and are widely used in recent research with child and adolescent subjects (e.g., Cohen & Lipsett, 1991; Konstantareas, 1991; Perrin, Stein, & Drotat, 1991).

2.7 Summary

From the foregoing review, the following findings may be summarized: (1) universal definitions of attachment and attachment behaviour have been arrived at; (2) infants may be predisposed to forming a secure attachment relationship with one main caregiver and other attachment relationships with subsequent figures in a hierarchical manner; (3) four specific attachment styles have been empirically supported (secure, anxious-ambivalent, anxious-avoidant, and anxious-disorganized/disoriented); (4) the actual antecedents events leading to the development of secure infant-primary caregiver attachment are numerous and have been revealed empirically; (5) the long-term effects of secure and insecure attachments to a primary caregiver have not been definitively supported in the empirical literature; (6) anxious attachment in infancy and early childhood may provide for a significantly increased risk of the development of psychopathology in adolescence, and adulthood; (7) a comprehensive instrument used for retrospectively assessing childhood attachment styles with adult subjects has been developed by George et al. (1985). This instrument is, however, time consuming to administer and score. Researchers may be able to gather equivalent data in a more efficient manner. An alternative instrument specifically geared towards adolescents could contain the capacity to examine particular issues in the development of attachment style more directly than is done with the Adult Attachment Interview; (8) ability to mourn is precipitated by attachment and the type of mourning (healthy versus pathological) may be determined by the attachment relationship the person mourning has or had with his or her primary caregiver; and (9) working models developed from insecure attachment relationships in early life appear to remain labile throughout life. It has been argued that the sensitive periods of development remain strongest through the immature years of development (from birth through adolescence). From these general findings, specific research questions can be presented.

2.8 Research Questions

Question 1: If, prior to the age of ten years, a child is assessed as having an insecure attachment to her or his primary caregiver, will that child be more likely to be assessed with having an identifiable form of psychopathology in adolescence?

Question 2: Do specific experiences predict attachment style more reliably if they are experienced with either or both parents?

Question 3: Are there certain pathologies which are significantly more reliably predicted by specific disturbances in childhood attachment?

2.8.1 A Structural Model

Some of the studies examining attachment in adolescence do not consider the development of attachment from early childhood. Further research is required to test the hypothesis held by attachment theorists (Bowlby, 1982; Sroufe, 1988) that the infant's and young child's attachment is a stable construct. Attachment is thought to change only when shifts occur in life circumstance that differ in important ways for the child and that these shifts remain consistent (Vaughn, Egeland, Waters, & Sroufe, 1979). Several researchers (Ainsworth & Bowlby, 1991; Main, 1991; Radke-Yarrow 1991; Sroufe, 1985; Vaughn et al., 1979) have demonstrated the stability of attachment up to the age of 10 years. Further empirical work is now required to study the implications of childhood attachment into adolescence.

As well as the above research questions, the foregoing review of relevant theories and data indicates that a general latent variable path model can now be constructed. Within this model, it can be posited that childhood attachment is central to the development of psychological adaptation in adolescence. Secure attachment results in emotional stability and positive psychological outcomes, while disrupted attachment results in psychological disturbances and pathology. As we have seen, attachment in childhood is affected by the relationship between the child and principal caregiver. If the child is emotionally isolated from the caregivers (e.g., caregiver fails to provide touching, contact comfort, eye contact, verbal responses, and facial expressions indicating positive emotions) or experiences overt abusiveness due to physical beatings, sexual abuse, overt neglect, threats of abandonment or punishment and so on, attachment between the child and caregiver will be severely disrupted. Conversely, emotional responsiveness and systematic care promotes secure attachment. Disrupted attachment leads to further isolation and increases further the risk of abuse which both, in turn, further affect attachment patterns. Accordingly, it is posited in this model that attachment, abuse and isolation are mutually influential and reciprocally causal. Over time (i.e., developmentally), isolation and abuse (which are distinct but correlated latent variables) lead to disrupted attachment which, in turn, reciprocally affects abuse and isolation which in turn further affect attachment, and so on. A schematic summarizing this causal latent variable path model is depicted in Figure 1 (see p. 121). By adolescence, this development pattern leads to disturbed psychological processes and pathology. In Figure 1, the latent variable of abuse (F1) is indicated by a number of observed variables, as is attachment (F2) and isolation (F3). The curved double headed arrows between the latent variables (F1, F2, F3) indicate correlation or reciprocal influence. The outcome of pathology is indicated by a square since this can be measured directly. This model will be tested by fitting data from the present study using structural equation modelling techniques (Anderson & Gerbing, 1988).

2.8.2 Exploratory Versus Confirmatory Approaches

The design and analyses in the present study contain both exploratory and confirmatory elements. In the exploratory realm, the Adolescent Attachment Survey (AAS) is a new instrument developed as part of the present study. Secondly, the sample is a Canadian sample and little research assessing childhood attachment has included Canadian data. In chapter three the development and validation of the AAS is discussed.

The confirmatory aspect of the present study relates to the numerous studies already completed in the area of attachment. There is now enough evidence available to allow for fitting a path model examining the influence of childhood experiences on attachment security and the influence of childhood attachment security on adolescent psychopathology.

CHAPTER 3

DEVELOPMENT AND VALIDATION OF THE ADOLESCENT ATTACHMENT SURVEY

The present dissertation encompasses two studies with similar methods: (1) a pilot study, which involved the development and validation of the Adolescent Attachment Survey, and (2) the main study in which the research questions were addressed and the latent variable path model tested. In order to discuss the topics relevant to both studies as well as the particulars within each, the relevant information is divided into two chapters. Chapter three contains a description of the methodology and results from the pilot study. Chapter four contains the information and results from the main study.

3.1 Identification of the Need for a New Instrument

Notwithstanding some empirical evidence directly bearing on the stability of attachment from infancy and early childhood through to adolescence and adulthood, more research is required to determine the stability and effects of childhood attachment in adolescence. In some of the existing studies, though, attachment is not clearly defined and from the methodology and assessment instruments used, the framework from which the researchers were working is not clear (e.g., Kwakman, et al., 1988).

A variety of instruments have been used to assess attachment of adolescents to their parents. The instruments vary in their ability to assess the construct of attachment as defined by Bowlby, but none of the instruments are complete in the sense of encompassing the two main types of attachment (secure and insecure) and in assessing childhood attachment, which are instrumental parts of the development of attachment theory (Ainsworth & Bowlby, 1991). Further research is required to develop an instrument that can assess adolescent attachment in accordance with the theoretical position taken by attachment theorists.

When assessing attachment, focus should be placed on attachments to parents (or parent substitutes). Moreover, attachments must be assessed separately for each parent as well as for both parents operating together as a system. The theoretical underpinnings for this approach to assessing attachment were provided by Bowlby (1969, 1973, 1980, 1982, 1988, 1991) and Ainsworth and Bowlby (1991), where the attachment to mother is hypothesized to be where a child's working models are established. However, the type and influence of attachment to father has been largely understudied. The behaviour (internal and external) of the person is thought to be moulded according to the security of attachment in this early relationship and recent theorizing has placed increasing importance on the security of attachment to the father as well as to the mother.

Empirical evidence supporting the hypothesis that the relationship between adolescents and their parents is important in determining adolescents' psychological health and style of peer relationships is abundant (Bachman et al., 1967; Burke & Weir, 1978; Coopersmith, 1967; Gallagher, 1976; Mortimer & Lorence, 1980; Offer & Offer, 1975; Rosenberg, 1965; Thomas et al., 1974). This research is largely epidemiological in nature, however, and thus has not focused on the theoretical base of emotional attachment of the child to the primary caregiver and its long-term effects. Additional research is required to investigate further the findings reviewed above. The present pilot study was undertaken, therefore, to develop a scale for measuring childhood attachment in adolescence so that it could be subsequently used to investigate the substantive theoretical issues outlined in the first two chapters.

3.2 Instruments

Two measures were used to assess childhood attachment: the Adolescent

Attachment Survey (AAS) developed in the present study, and The Parental Bonding Instrument (PBI, Parker, Tupling & Brown, 1979). In addition, the Youth Self Report (YSR; Achenbach, 1991b) and the Child Behavior Checklist CBCL; Achenbach, 1991a) were used in conjunction with clinical diagnosis to measure current level and type of psychopathology. The AAS is discussed first and the PBI is outlined in the following section, followed by an explanation of each of the YSR and CBCL.

3.2.1 Adolescent Attachment Survey (AAS)

The AAS consisted of 177 questions designed to obtain a description of each subject, information on variables revealed in the literature to be related to attachment, and to obtain a measure of attachment. A complete listing of these variables is provided in Table 1.

As indicated in the discussion of methodological issues, it is necessary to clarify the definition of attachment employed in a study of attachment. In the present study the following definition was adopted: attachment is the desire for subjects to seek and maintain proximity with their primary caregivers, both individually and together.

The type of attachment was measured in the AAS using items 41 through 55 (see Table 1). Each adolescent was asked to select five words to describe his/her relationship with his/her mother, father, and both parents together. The words were selected from a list of 21 possible choices for each parent; the same selections were available for each of the parental combinations. These words were selected from descriptions of relationships found throughout the literature. The choices were divided into two main segments: secure and insecure. The first eight words on the list were used to signify security; the remaining 13 words denoted insecurity. In a recent meta-analysis (Fox, Kimmerly, & Schafer, 1991) it was found that children had the same attachment type (secure or insecure) to

Table 1

Contents of the Adolescent Attachment Survey

Item Number	Item	Subscale	Scoring
1.	Gender		1=male, 2=female
2.	Age		12, 13, 14, 15, 16, 17, 18
3.	Ethnicity		1=White 2=Black 3=Asian 4=East Indian 5=Aboriginal 6=Mixed 7=Metis 8=Other
4.	Number of siblings		0-10
5.	Older siblings		0-10
6.	Younger siblings		0-10
7.	Same age siblings		0=none, 1=twin, 2=triplets
8.	Present school grade		5-12
9.	Repeated grades		0-2, 3=more than twice
10.	Number of moves in same municipality	Moves	0-12, 13=more than 12
11.	Number of moves to different municipalities	Moves	0-12, 13=more than 12
12.	Daily separation from primary caregiver.	Separation	1=no. 2=yes
13.	Left with whom	Separation	1=grandparent(s), 2=nanny, 3=day care, 4=relative, 5=baby sitter, 6=family friend, 7=different people, 8=other
14.	Left where	Separation	1=home, 2=elsewhere, 3=varied
15.	Number of hours per day	Separation	1=1-4 hours, 2=5-8 hours, 3=more than eight hours, 4=less than one hour
16.	Number of days per week	Separation	1-6, 6=six or seven days
17.	Permanent separation from parent(s)	Separation	1=no, 2=father, 3=mother, 4=both
18.	Subject age at time of losing father	Separation	1-10, 11=less than 1 year old
19.	Reason for permanent separation-father	Separation	1=work, 2=marital separation, 3=parent illness, 4=subject illness, 5=mother's death, 6=father's death, 7=both parents' death, 8=other

Table 1 Continued

20.	Any substitute father	Separation	1=no, 2=yes
21.	Subject age at getting substitute father	Separation	1-10, 11=less than 1 year old
22.	Subject age at time of losing mother	Separation	1-10, 11=less than 1 year old
23.	Reason for permanent separation-mother	Separation	1=work, 2=marital separation, 3=parent illness, 4=subject illness, 5=mother's death, 6=father's death, 7=both parents' death, 8=other
24.	Any substitute mother	Separation	1=no, 2=yes
25.	Subject age at getting substitute mother	Separation	1-10, 11=less than 1 year old
26.	Long-term separation from both parents	Separation	1=no, 2=yes, 3=not sure
27.	Number of times	Separation	1, 2=2-4, 3=5-9, 4=10 or more
28.	Age at initial separation	Separation	1-10, 11=less than 1 year old
29.	Length of longest separation		1=1-4 weeks, 2=4-12 weeks, 3=more than 12 weeks
30.	Reason for separation -both parents	separation	1=work, 2=holidays, 3=marital, 4=parent illness, 5=subject illness, 6=other
31.	Long-term separation from father	Separation	1=no, 2=yes, 3=not sure
32.	Number of times	Separation	1, 2=2-4, 3=5-9, 4=10 or more
33.	Age at initial separation	Separation	1-10, 11=less than 1 year old
34.	Length of longest separation	Separation	1=1-4 weeks, 2=4-12 weeks, 3=more than 12 weeks
35.	Reason for separation -father	Separation	1=work, 2=holidays, 3=marital separation, 4=parent illness, 5=subject illness, 6=other
36.	Long-term separation from mother	Separation	1=no, 2=yes, 3=not sure
37.	Number of times	Separation	1, 2=2-4, 3=5-9, 4=10 or more
38.	Age at initial separation	Separation	1-10, 11=less than 1 year old
39.	Length of longest separation	Separation	1=1-4 weeks, 2=4-12 weeks, 3=more than 12 weeks
40.	Reason for separation -mother	Separation	1=work, 2=holidays, 3=marital separation, 4=parent

Table 1 Continued

			illness, 5=subject illness, 6=other
41-45.	Description of relationship with mother	Attachment	Secure=loving, secure, happy, safe, caring, close, cheerful, friendly: Insecure=confused, tense, sad, scary, unsafe, frightening, violent, distant, spiteful, angry, bullied, hateful, abusive
46-50.	Description of relationship with father	Attachment	Secure=loving, secure, happy, safe, caring, close, cheerful, friendly: Insecure=confused, tense, sad, scary, unsafe, frightening, violent, distant, spiteful, angry, bullied, hateful, abusive
51-55.	Description of relationship with both parents	Attachment	Secure=loving, secure, happy, safe, caring, close, cheerful, friendly: Insecure=confused, tense, sad, scary, unsafe, frightening, violent, distant, spiteful, angry, bullied, hateful, abusive
56.	Support-both parents	Parental Involvement	1=none, 2=very little, 3=some, 4=very much
57.	Support when needed	Parental Involvement	1=never, 2=rarely, 3=sometimes, 4=often
58.	Support-mother	Parental Involvement	1=none, 2=very little, 3=some, 4=very much
59.	Support when needed	Parental Involvement	1=never, 2=rarely, 3=sometimes, 4=often
60.	Affection-mother	Parental Involvement	1=never, 2=rarely, 3=sometimes, 4=often
61.	Affection when needed	Parental Involvement	1=never, 2=rarely, 3=sometimes, 4=often
62.	Physical proximity -mother	Parental Involvement	1=never, 2=rarely, 3=sometimes, 4=often
63.	Enough proximity	Parental Involvement	1=enough, 2= not enough
64.	Support-father	Parental Involvement	1=none, 2=very little, 3=some, 4=very much
65.	Support when needed	Parental Involvement	1=never, 2=rarely, 3=sometimes, 4=often
66.	Affection-mother	Parental Involvement	1=never, 2=rarely, 3=sometimes, 4=often
67.	Affection when needed	Parental Involvement	1=never, 2=rarely, 3=sometimes,

Table 1 Continued

			4=often
68.	Physical proximity -mother	Parental Involvement	1=never, 2=rarely, 3=sometimes, 4=often
69.	Enough proximity	Parental Involvement	1=enough, 2= not enough
70.	Sick but no hospital		1=no, 2=yes
71.	Main caregiver		1=mother, 2=father, 3=sibling, 4=other
72.	Show much concern for subject		1=no, 2=yes
73.	Other close adults		1=no, 2=yes
74.	Felt rejected-both parents		Neglect 1=never, 2=rarely, 3=sometimes, 4=often
75.	Age first remember rejection	Neglect	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
76.	Did parents realize they were rejecting	Neglect	1=no, 2=yes, 3=sometimes, 4=often
77.	Felt rejected-mother	Neglect	1=never, 2=rarely, 3=sometimes, 4=often
78.	Age first remember rejection	Neglect	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
79.	Did mother realize she was rejecting	Neglect	1=no, 2=yes, 3=sometimes, 4=often
80.	Felt rejected-father	Neglect	1=never, 2=rarely, 3=sometimes, 4=often
81.	Age first remember rejection	Neglect	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
82.	Did father realize he was rejecting	Neglect	1=no, 2=yes, 3=sometimes, 4=often
83.	Threats of abandonment -both parents	Threats	1=never, 2=rarely, 3=sometimes, 4=often
84.	Age of first recall	Threats	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
85.	Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
86.	Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
87.	Threats of abandonment -mother	Threats	1=never, 2=rarely, 3=sometimes, 4=often
88.	Age of first recall	Threats	1=less than two years old, 2=two to

Table 1 Continued

		three years, 3=four to six years, 4=seven to 10 years
89. Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
90. Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
91. Threats of abandonment -father	Threats	1=never, 2=rarely, 3=sometimes, 4=often
92. Age of first recall	Threats	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
93. Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
94. Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
95. Blamed for parent illness by both parents	Blame	1=never, 2=rarely, 3=sometimes, 4=often
96. Age of first recall	Blame	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
97. Frequency	Blame	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
98. Time period	Blame	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
99. Blamed for parent illness by mother	Blame	1=never, 2=rarely, 3=sometimes, 4=often
100. Age of first recall	Blame	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
101. Frequency	Blame	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
102. Time period	Blame	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
103. Blamed for parent illness by father	Blame	1=never, 2=rarely, 3=sometimes, 4=often
104. Age of first recall	Blame	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
105. Frequency	Blame	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
106. Time period	Blame	1=less than one week, 2=1-4 weeks,

Table 1 Continued

		3=4-52 weeks, 4= more than 52 weeks
107. Parents threaten to harm selves-both parents	Threats	1=never, 2=rarely, 3=sometimes, 4=often
108. Age of first recall	Threats	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
109. Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
110. Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
111. Mother threaten to harm self	Threats	1=never, 2=rarely, 3=sometimes, 4=often
112. Age of first recall	Threats	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
113. Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
114. Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
115. Father threaten to harm self	Threats	1=never, 2=rarely, 3=sometimes, 4=often
116. Age of first recall	Threats	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
		years
117. Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
118. Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4=more than 52 weeks
119. Parents threaten to harm subject-both parents	Threats	1=never, 2=rarely, 3=sometimes, 4=often
120. Age of first recall	Threats	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
121. Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
122. Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
123. Mother threaten to harm subject	Threats	1=never, 2=rarely, 3=sometimes, 4=often

Table 1 Continued

124. Age of first recall	Threats	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
125. Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
126. Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
127. Father threaten to harm subject	Threats	1=never, 2=rarely, 3=sometimes, 4=often
128. Age of first recall	Threats	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
129. Frequency	Threats	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
130. Time period	Threats	1=less than one week, 2=1-4 weeks, 3=4-52 weeks, 4= more than 52 weeks
131. Parents withheld love from subject-both parents	Neglect	1=never, 2=rarely, 3=sometimes, 4=often
132. Age of first recall	Neglect	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
133. Frequency	Neglect	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
134. Time period	Neglect	1=less than one hour, 2=1-24 hours, 3=24-168 hours, 4= more than 168 hours
135. Mother withheld love from subject	Neglect	1=never, 2=rarely, 3=sometimes, 4=often
136. Age of first recall	Neglect	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
137. Frequency	Neglect	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
138. Time period	Neglect	1=less than one hour, 2=1-24 hours, 3=24-168 hours, 4= more than 168 hours
139. Father withheld love from subject	Neglect	1=never, 2=rarely, 3=sometimes, 4=often
140. Age of first recall	Neglect	1=less than two years old, 2=two to

Table 1 Continued

		three years, 3=four to six years, 4=seven to 10 years
141. Frequency	Neglect	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
142. Time period	Neglect	1=less than one hour, 2=1-24 hours, 3=24-168 hours, 4= more than 168 hours
143. Parents made fun of subject-both parents	Neglect	1=never, 2=rarely, 3=sometimes, 4=often
144. Age of first recall	Neglect	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
145. Frequency	Neglect	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
146. Mother made fun of subject	Neglect	1=never, 2=rarely, 3=sometimes, 4=often
147. Age of first recall	Neglect	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
148. Frequency	Neglect	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
149. Father made fun of subject	Neglect	1=never, 2=rarely, 3=sometimes, 4=often
150. Age of first recall	Neglect	1=less than two years old, 2=two to three years, 3=four to six years, 4=seven to 10 years
151. Frequency	Neglect	1=once, 2=2-5 times, 3=6-9 times, 4=10 or more times
152. Subject beaten physically		Physical Abuse 1=never, 2=yes
153. Relation to perpetrator	Physical Abuse	1=stranger, 2=person at work, 3=friend, 4=neighbour, 5=teacher, 6=counselor, 7=youth worker, 8=other professional, 9=mother, 10=father, 11=sister, 12=brother, 13=other relative, 14=other
154. Gender of perpetrator	Physical Abuse	1=male, 2=female
155. Age at onset	Physical Abuse	1-17, 18=under 1 year of age
156. Age at last episode	Physical Abuse	1-17, 18=under 1 year of age
157. Age of perpetrator	Physical Abuse	1= less than 20 years old, 2=20-29 years, 3=30-39 years, 4=40-49 years, 5=50-59 years, 6= 60 years or older
158. Shown subject sex magazines	Sexual Abuse	1=never, 2=yes

Table 1 Continued

159. Subject wanted this	Sexual Abuse	1=no, 2=yes
160. Was there a time when this happened and subject did not want this	Sexual Abuse	1=never, 2=yes
161. Shown subject sex videos or movies	Sexual Abuse	1=never, 2=yes
162. Subject wanted this	Sexual Abuse	1=no, 2=yes
163. Was there a time when this happened and subject did not want this	Sexual Abuse	1=never, 2=yes
164. Shown subject sex parts	Sexual Abuse	1=never, 2=yes
165. Subject wanted this	Sexual Abuse	1=no, 2=yes
166. Was there a time when this happened and subject did not want this	Sexual Abuse	1=never, 2=yes
167. Talk to subject in sexual manner	Sexual Abuse	1=never, 2=yes
168. Subject wanted this	Sexual Abuse	1=no, 2=yes
169. Was there a time when this happened and subject did not want this	Sexual Abuse	1=never, 2=yes
170. Touched or had sex with subject	Sexual Abuse	1=never, 2=yes
171. Subject wanted this	Sexual Abuse	1=no, 2=yes
172. Was there a time when this happened and subject did not want this	Sexual Abuse	1=never, 2=yes
173. Relation to perpetrator	Sexual Abuse	1=stranger, 2=person at work, 3=friend, 4=neighbour, 5=teacher, 6=counselor, 7=youth worker, 8=other professional, 9=mother, 10=father, 11=sister, 12=brother, 13=other relative, 14=other
174. Gender of perpetrator	Sexual Abuse	1=male, 2=female
175. Age at onset	Sexual Abuse	1-17, 18=under 1 year of age
176. Age at last episode	Sexual Abuse	1-17, 18=under 1 year of age
177. Age of perpetrator	Sexual Abuse	1= less than 20 years old, 2=20-29 years, 3=30-39 years, 4=40-49 years, 5=50-59 years, 6= 60 years or older

both parents. That is, children were significantly more likely to be either securely or insecurely attached to both parents rather than securely attached to one parent and insecurely attached to the other.

To test this finding further, the present study included assessment of the overall attachment type of subjects to parents (that is, the combined scores of attachment to parents together and to each of parent individually) as well as the results of attachment to parents together and then to each parent individually.

The responses provided by each adolescent were coded (two for each secure word chosen and one for each insecure word chosen) and then summed across mother, father, and both parents. These total scores were then compared and a cut off score was established to differentiate between secure and insecure attachment. The cut off score was arrived at as follows. The range of the total scores was from 15 (if subjects selected only insecure words) to 30 (if subjects selected only secure words). To allow for any arguments within a family that were indicative only of recent and minor conflicts and not of the relationship as a whole prior to the child turning 10 years of age, the cut-off score was set at 26. Therefore, the purpose for selecting 26 was to allow for these errors in the assessment of attachment. Subjects with scores of less than 26 were considered to have insecure attachments.

As well as assessing childhood attachment, the AAS included a number of questions about childhood experiences. The specific experiences included were identified in the literature to discriminate between secure and insecure childhood attachment. These variables include: separation (questions 12-40, see Table 1); level of parental involvement (56-69); neglect (74-82, 131-151); threats (83-94, 107-130); parents blaming children for the parents' difficulties (95-106); physical abuse (152-157); and sexual abuse (158-177).

3.2.2 The Parental Bonding Instrument (PBI)

The second instrument used to assess childhood attachment was the PBI. The purpose of using the PBI was to evaluate the criterion-related validity of the attachment subscale of the AAS. The PBI, which contains 25 items rated on a 4-point Likert type scale was designed to measure self-reported care and overprotection given by parents as perceived by the adolescent. The PBI focuses on two principal underlying dimensions of parental characteristics: care versus indifference/rejection and overprotection versus encouragement of autonomy and independence.

3.2.2a Reliability evidence. To obtain a measure of reliability, Parker et al. (1979) began with a questionnaire consisting of an initial set of 48 items. Test-retest results for the total scale, utilizing a six month interval, resulted in a coefficient of .70 ($\underline{p}$<.001). Test-retest reliability using the same interval was .76 ($\underline{p}$<.001) for the care scale and .63 ($\underline{p}$<.001) for the overprotection scale. The split-half reliability (a Pearson coefficient corrected with the Spearman-Brown formula) was .88 ($\underline{p}$<.001) for the care scale and .74 ($\underline{p}$<.001) for the overprotection scale. The number of items for the PBI was reduced to 25 through the removal of redundant items found in a factor analytic study (Parker 1979).

3.2.2b Validity evidence. Parker (1979) indicated that perceived rather than actual characteristics are of greater relevance. Consequently, to assess the validity of the care and overprotection scores the agreement between the subscale scores and independent care and overprotection scores were assessed. Two raters independently assigned a “care” and an “overprotection” score for each parent in a parent study (Parker, 1979). These independent scores were obtained from a semi-structured interview with the parents and then correlated with those determined by the scales. The Pearson correlation for the two care measures were .77 ($\underline{p}$<.001) for one rater and .77 ($\underline{p}$<.001) for the second rater.

The correlations for the two "overprotection" scales were .48 (p<.001) for one rater and .51 (p<.001) for the second rater. The PBI has evidence for reliability and some evidence of validity and since it is relatively quick and easy to administer, it was thought to be adequate for present purposes.

3.2.3 The Youth Self Report (YSR)

The YSR is a self-report measure which contains 118 behaviour problem items and a social competence scale (Achenbach, 1991b). Originally developed by Achenbach and Edelbrock (1983) and later revised by Achenbach (1991b), the YSR, along with the CBCL was used in the present study for the purpose of assessing current levels and type of psychopathology demonstrated by adolescent subjects. Individual scale scores (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, aggressive behaviour, and for boys, self-destructive identity problems), externalizing and internalizing scores and an overall total problem score are produced. Scores based on age and sex appropriate norms for externalizing, internalizing, total problems, and each of the specific behaviours are available.

3.2.3a Reliability evidence. Seven day and seven month test-retest reliabilities are reported by Achenbach (1991b). Internal consistency, however, is the more central issue in relation to the present study. In discussing the internal consistency of the YSR, Achenbach (1991b) explained that the scales were developed from principal components analyses of the correlations among items. He further argued that the composition of the scales were therefore based on internal consistency and that subsequent measures of internal consistency were redundant. Achenbach (1991b) did report the alpha values using Cronbach's (1951) alpha for the scales. The individual scale scores ranged from a low of .59 (withdrawn) to a high of .90 (anxious/depressed). The mean alpha value for the scales was .75. Achenbach (1991b) argued that the reason for the lower alpha values on some of the scales was that the different questions are tapping in to different aspects of the target phenomenon, thus being subject to different errors of measurement. The broad measures had higher alpha values. The value for internalizing was .89, the value for externalizing was .89, and the value for the total problem score scale was .95.

3.2.3b Validity evidence. The YSR items have their base in research conducted by Achenbach (1966) on child and adolescent psychiatric case histories. The specific problem items on the YSR were adapted from the Child Behaviour Checklist (CBCL), for which the validity is discussed below. To adapt the items for youth to respond to items about themselves, Achenbach (1991b) changed the statements to reflect first person wording.

Achenbach (1991b) compared the scores obtained on each item by 1054 youths referred for mental health services and 1054 demographically similar nonreferred youths. The groups were also matched for socioeconomic status (SES) and ethnicity. The referred youths scored significantly higher ($p<.01$) on 95 of the 101 problem items. To assess the criterion-related validity of the YSR scores, Achenbach (1991b) used referral for mental health services to test the criterion-related validity of the empirically derived scales on the YSR. Although such referral is not an infallible criterion of need for help, the author selected this over use of DSM diagnostic categories as the DSM categories are not themselves derived from assessment of children and adolescents. Analyses were carried out separately for boys ($n = 1072$) and girls ($n = 1036$). Multiple regression analyses of scale scores were conducted to assess the effects of referral status as well as for demographic variables, age, SES, and ethnicity. All but one of the scales demonstrated effects of referral status that were significant at $p<.01$ level, reflecting higher problem scores for the referred group. Somatic Complaints was significant at $p<.015$.

3.2.4 The Child Behaviour Checklist (CBCL)

The CBCL was used to cross-validate the information gathered from the subjects through the YSR. As Achenbach (1991b) argued, "adolescents' self-reports constitute one facet of assessment that should include reports by informants who see the adolescents in different contexts, as well as by the adolescents themselves." (p. 3). Parents are typically among the most important sources of data about a child's problems and "parents' reports should therefore be obtained in the assessment of children's competencies and problems whenever possible" (Achenbach, 1991a, p. 3).

3.2.4a Reliability evidence. The CBCL is designed to obtain parents' reports of children's competencies and problems in a standardized format (Achenbach, 1991a). Numerous reports have documented adequate reliability and validity for the CBCL (Kelley, 1985; Mooney, 1985). Achenbach (1991a) reported that inter-interviewer and test-retest reliabilities of the CBCL item scores were supported by intra-class correlations in the .90s for the mean item scores obtained by different interviewers and for reports by parents on two occasions seven days apart. Seven day as well as one and two year test-retest reliability of the CBCL scale scores are reported for the problem scales. As discussed with the YSR, internal consistency is the relevant form of reliability for the present study. Achenbach (1991a) explained that the scales of the CBCL were derived from principal components analyses of the correlations among items. He further argued that the composition of the scales were therefore based on internal consistency and that subsequent measures of internal consistency were redundant. Achenbach (1991a) did report the alpha values using Cronbach's (1951) alpha for the scales. The individual scale scores ranged from a low of .68 (thought problems) to a high of .92 (aggressive behaviour). The mean alpha value for the scales was .81. Achenbach (1991a) argued that the reason for the lower alpha values on some of the scales was that the different questions are tapping in to different aspects of the target phenomenon, thus being subject to different errors of measurement. The broad measures had higher alpha values. The value for internalizing was .90, the value for externalizing was .93, and the value for the total problem score scale was .96.

3.2.4b Validity evidence. Validity of the scores yielded by the CBCL have been established through analysis of covariance procedures in which demographically matched samples of referred and nonreferred subjects were compared. Referred children scored significantly higher on all of the problem items which count toward the total problem score ($p<.01$). Further, significant correlations with analogous scales on the Conners (1973) Parent Questionnaire and the Quay-Peterson (1983) Revised Behaviour Problem Checklist were found ($P<.001$) (Achenbach, 1991a).

Perrin et al. (1991) reported that the CBCL and the YSR have numerous advantages including an empirical assessment of symptoms based on two large, demographically diverse standardization samples, one group consisting of children referred for mental health services and the other of children who had not been referred. The availability of separate instruments for reporting by children and parents provides a comparative assessment of the subject's behaviour, and the age range on the YSR (11 to 18 years of age) allows for longitudinal assessment of adolescents utilizing the same instrument.

3.3 The Pilot Study

The purpose of the pilot study was to determine the psychometric properties of the Adolescent Attachment Survey (AAS). The pilot study was designed to collect data from two groups of adolescents (males and females) between the ages of 12 and 17 years. Group one consisted of adolescents who were living in a residential treatment centre, attended as a day patient, or were diagnosed and professionally referred to the residential centre for psychiatric treatment. There was no requirement that these subjects lived with their parents or attended school. In contrast, group two consisted of adolescents from the community who were living with their natural parents (in an intact family) and were attending public school.

3.3.1 Sampling Method

A non-probability sample of adolescent volunteers along with their parents, where possible, was used in this study. For the clinical group, permission to approach the adolescents and their parents was granted from the treatment centres in question. The adolescents and their parents were then invited to participate in the present study and a time and place was arranged with those who agreed to participate.

For the community group, a local school board was approached with the request to contact those students from the school board who met the criteria for the study along with their parents and invite them to participate in the present study. When permission was granted, letters were sent home with those students who were eligible and follow up telephone calls were made to those who demonstrated interest through returning signed forms indicating permission for the researcher to contact the parents and the adolescent. Upon telephone contact general information about the study (see Appendix A) was communicated and any questions the potential subjects had were answered before an interview time was arranged. If the family maintained an interest in the study, an appointment was made for a meeting at the family home in order for the three people to complete the questionnaires.

3.3.2 Using Computers to Gather Data

Computers have been used effectively to gather data and conduct interviews in areas such as childhood sexual abuse, suicide risk, substance use disorders, mental status examination, and sexual dysfunction (Baskin, 1990; Violato & Genuis, 1992; Mezzich & Mezzich, 1988). Baskin (1990) argued strongly for increased use of the computers for assessment in both psychiatry and psychology. Although limited work has been conducted using computers to gather data on sensitive issues such as the variables listed above as relating to the development of attachment type, individual assessment tools have been programmed onto computer and implemented with success (Baskin, 1990; Violato & Genuis, 1992).

The present work was aimed at utilizing this knowledge and attempted to expand on the findings of these other researchers. The Adolescent Attachment Survey (AAS) was programmed on to a Macintosh computer by the researcher for the purposes of the present study. Subjects therefore interacted with the computer in order to complete the questionnaire. One advantage of using computers in this work included the possibility that participants would view the computer as less threatening than an interviewer when discussing sensitive or personal issues (Bagley & Genuis, 1991). Other advantages included time saved and convenience for the participant as compared to using paper and pencil measures. Responses were also directly entered into the computer and therefore no further data entry was required. A possible disadvantage of using computers was that it may have been intimidating for participants who had little experience with computers. This was compensated for in three ways. First, there was a short introduction at the beginning of the interview to familiarize the participant with the computer. Second, the researcher was available to the participant to help with any related difficulties. Third, the questionnaire was programmed to be user friendly.

By contrast, other studies in this area have utilized either a person interview (Main & Goldwyn, 1984), paper and pencil questionnaires (Armsden & Greenberg, 1987), a combination of the two (Kobak & Sceery, 1988), or medical records or clinical reports (Serbin et al., 1991) in order to gather the necessary data. Since using computers to collect data in this study was a unique approach, all subjects were asked to evaluate the use of the computer to and to indicate their preference of being asked personal information through the use of computers, paper and pencil instruments, or in person interviews (see Appendix B).

3.3.3 Administrative Procedures

Data for the pilot study were gathered during October and November of 1992. The average length of time of meeting per family was 90 minutes. Adolescents completed the AAS along with the PBI and the YSR, while the parents were administered the CBCL. The measure of childhood attachment was therefore based on a questionnaire administered to each adolescent individually. Subjects in the clinical group completed the questionnaires at the same time as their parents or legal guardians, if either or both parents or guardians were available. These subjects along with their parents completed the questionnaires at the residential home, with each participant working alone in a private room. The researcher was situated in an adjacent room for the time that the participant completed the questionnaire and was available in the event that the subject or parents decided to discuss or disclose any personal or other information. In the community, the adolescents also completed the questionnaire at the same time as their parents. This was done in their home with each person in a separate room and the researcher present for the reasons mentioned above. Catholic Family Services was notified about the study and agreed to accept referrals if requested or agreed to by the individual participant.

The use of computers to collect data was based on the design of Violato and Genuis (1992) where the questionnaire was programmed on to a computer and the subjects interacted with the computer in order to complete one of the questionnaires. As in the Violato and Genuis (1992) study, sheets of paper were placed beside the computer for the participants to write more about particular questions or at any time they wished while they were completing the questionnaire. All subjects were invited to discuss any aspect of the questionnaire or talk further about any given question with the researcher present.

Interviews were structured in a manner which allowed for subjects to be informed about the work as well as to allow them an opportunity to become familiar with the computer if that was necessary. Upon meeting at the designated place each participant family was greeted together by the interviewer and provided the appropriate information about the study (see Appendix A for a copy of the information given to subjects. This was the same information provided over the telephone to the subjects' parents). Once they were finished reading the information, the interviewer reiterated each main point on the information form which they had just read. Each participant was then given the opportunity to ask questions about the research or withdraw if they wished. Once the participants were satisfied that all their present questions were answered, and they agreed to continue participating in the study (none of the subjects or their parents left at this point), the researcher asked the participants to each go to a separate room. It was at this time that the participants began filling out the YSR, CBCL, or the PBI, whichever was appropriate according to who the participant was. In the case of the AAS, the interviewer coached each adolescent through the introduction section of the questionnaire so as to make sure that the participant was clear as to how to use the computer to answer the questions. When both the participant and interviewer were satisfied that the subject was clear about how to use the computer appropriately, the subject was left to complete the questionnaire in private.

Upon completion of the questionnaires, the participants notified the interviewer, who was in an adjacent room. At this time the subjects were thanked for their participation in the study.

3.4 Results of the Pilot Study

The results of the pilot study are reported in the following three subsections: (1) description of the sample, (2) reliability, (3) validity.

3.4.1 Description of the Sample

Two groups of adolescents were included in the present pilot study. Adolescents in the clinical group (n = 12), lived in a residential treatment centre a the time of the study, attended as a day patient, or were diagnosed and professionally referred to the residential centre for psychiatric treatment. The adolescents included in the community group (n = 17) came from an intact family.

The description of each group as well as the total sample is summarized in Table 2. The pilot study included 29 adolescent subjects and the parents they had contact with. The adolescents in each of the clinical and community groups ranged in age from 13 to 17 years. The mean age for the clinical group was 14.75 with a standard deviation of 1.18. The mean age of the community group was 15.05 with a standard deviation of 1.59. Therefore, for the pilot sample of adolescent subjects, the ages ranged from 13 to 17 years with a mean age 14.93 years and a standard deviation of 1.46 years. Five of the clinical adolescents were male and seven were female. Nine of the community group adolescents were male and eight were female. For the sample then, 14 of the adolescent subjects were male and 15 were female. One clinical group subject had contact with her mother only and one had contact with his father only. Two of the 12

Table 2

Descriptive Characteristics of the Pilot Study*

Variable	Clinical Group n[a]	Clinical Group (%)[b]	Community Group n[a]	Community Group (%)[b]	Total n[a]	Total (%)[b]
Gender: Adolescents						
Male	5	(35.7)	9	(64.3)	14	(100)
Female	7	(46.7)	8	(53.3)	15	(100)
Family Constellation						
Family triads	8	(32.0)	17	(68.0)	25	(100)
Adolescent-mother dyads	1	(100)	0	(0)	1	(100)
Adolescent-father dyads	1	(100)	0	(0)	1	(100)
Adolescent only	2	(100)	0	(0)	2	(100)
Repeated Grades						
Zero	7	(29.2)	17	(70.8)	24	(100)
One	4	(100)	0	(0)	4	(100)
Two or more	1	(100)	0	(0)	1	(100)
Ethnicity						
Caucasian	9	(34.6)	17	(65.4)	26	(100)
Metis	1	(100)	0	(0)	1	(100)
Asian	1	(100)	0	(0)	1	(100)
Black	0	---	0	---	0	---
East Indian	0	---	0	---	0	---
Aboriginal	0	---	0	---	0	---
Mixed	1	(100)	0	(0)	1	(100)
Other	0	---	0	---	0	---
Socioeconomic Status						
Entrepreneurial or professional	4	(40.0)	6	(60.0)	10	(100)
Skilled labour	3	(21.4)	11	(78.6)	14	(100)
Unskilled labour/ unemployed	1	(100)	0	(0)	1	(100)

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[a] Number of subjects within this category

[b] Percentage of subjects within this category

*Ages for the clinical group ranged from 13 to 17 years, mean age = 14.75, standard deviation = 1.18. For the community group, the ages also ranged from 13 to 17 years, with a mean = 15.05, and standard deviation = 1.59. For the total pilot sample, ages ranged from 13 to 17 years, mean age = 14.93, standard deviation = 1.46 years.

clinical group adolescents had no contact with their mother or father and thus data were gathered from the adolescents alone. All of the 17 community group adolescents had contact with both parents. Therefore, there were a total of 25 family triads, one adolescent-mother dyad, one adolescent-father dyad, and two adolescents without parental contact. Of the 12 clinical group subjects, seven had never repeated a grade in school. Four had repeated once and one had repeated two or more times. None of the 17 community group subjects had been required to repeat a grade. Thus, of the 29 adolescents, four had been required to repeat a grade in school once and one subject repeated twice or more. There were nine clinical subjects who were Caucasian, one was Metis, one was Asian, and one was racially mixed. One clinical subject did not respond to this question. All 17 of the community subjects were Caucasian. For the total sample then, most of the subjects were Caucasian ($\underline{n} = 26$) with the next most frequent categories being Asian, Metis and racially mixed ($\underline{n} = 1$).

Socioeconomic status was determined by using father's occupation. This was divided into three categories: 1. entrepreneurial or professional. This was defined as the father having his own business, or working in a professional field such as law, medicine, teaching and so on, 2. Skilled labour, defined as electricians, plumbers, carpenters and so on, and 3. unskilled labourer, or was unemployed. Four of the 12 clinical subjects were from an entrepreneurial or professional background, three had fathers who were employed as skilled labourers and one subject had a father who was either worked as an unskilled labourer or unemployed. Six of the community group adolescents were from an entrepreneurial or professional background, eleven had fathers who worked as skilled labourers and none had fathers who worked as unskilled labourers or were unemployed. For the total pilot sample then, 10 subjects were from an entrepreneurial or professional background, 14 subjects had fathers who were employed as skilled labourers, and one subject came from a home where the father worked either as an unskilled labourer, or was unemployed. Three subjects did not have contact with their fathers, and 1 subject failed to answer this question.

The externalizing, internalizing, and total problem scores from the YSR were used to determine the direction of clinical presentation for the clinical subjects. Seven clinical subjects were diagnosed as having internalizing problems and five were diagnosed as having externalizing difficulties. Further, of the clinical subjects, total problem scores for all 12 fell in the clinical range. Subjects can demonstrate clinical scores in more than one area which explains the overlap of scores demonstrated here.

Specific information about the relationship between secure and insecure attachment and childhood experience as well as the psychometric properties established of the AAS are provided below.

3.4.2 Reliability

The internal consistency of the various sub-scales of the AAS listed in Table 3 was determined using Cronbach's alpha (1951). Cronbach's alpha was selected because of the presence of both dichotomous and non-dichotomous items within the AAS. Table 3 contains the values found for each subscale together with the corresponding number of items, means, and standard deviations.

As can be seen in Table 3, the internal consistency of each subscale exceeded .80. These high alpha values are an indication of the adequate internal consistency of the AAS subscales.

3.4.3 Validity

3.4.3a Content validity evidence. As discussed earlier in this chapter, the variables included in the AAS were generated from a thorough search of the published literature on attachment. The variables were selected from the literature if they were demonstrated to have an empirical relationship with attachment.

Table 3

Reliability of the Adolescent Attachment Survey Subscales for the Pilot Study

Variable	Number of Items	Mean	Standard Deviation	Alpha Values
Attachment	29	76.00	51.10	.95
Separation	15	20.56	17.10	.82
Neglect	30	25.56	21.87	.95
Parental Involvement	14	41.37	7.50	.82
Blame	12	7.33	8.99	.95
Threats	36	21.56	20.99	.95
Physical Abuse	6	10.93	15.78	.86
Sexual Abuse	23	24.93	22.26	.81

Variables were also included if they were reported in the literature as being theoretically associated with attachment with the relationship not yet being tested. The researcher also consulted individually with two developmental and two clinical psychologists. Each of these professionals had a Ph.D. and held a full-time academic position at the time of the study.

Prior to beginning the pilot study, the researcher demonstrated the computer form of the questionnaire to both clinical and developmental psychologists who were knowledgeable in the area of attachment. In previous research (Bagley & Genuis, 1991), 91 percent of 200 subjects said that they preferred using the computer version of the questionnaire to a self-completion method or personal interview. Also, 97 percent said the computer screen was easy to read; 99 percent said the computer was easy to use, and 88 percent said that it was easy to respond honestly to the computer about personal matters. Bagley and Genuis (1991) also reported a significant increase in the disclosure of sexual abuse (unwanted sexual contact prior to age 17) than was found in the same population using a paper and pencil method of gathering data ($\underline{\chi}^2 = 4.22$, $\underline{p}<.01$).

3.4.3b Empirical validity evidence. Concurrent criterion-related validity was another form of validity evidence for the AAS. The attachment scale of the AAS was correlated with the care and overprotection scales of the PBI, and with each of the internalizing, externalizing and total problems scales of the YSR.

In the present pilot study, attachment as measured with the AAS was positively and significantly correlated with care as measured by the PBI ($\underline{r} = .45$, $\underline{p}<.05$). Attachment was negatively but nonsignificantly correlated with overprotection ($\underline{r} = -.28$, $\underline{p}<.20$). These findings support the criterion-related validity of the attachment scale in the AAS as it is meant to positively correlate with parental care as measured by the PBI and negatively with overprotection.

The Internalizing scale of the YSR combines measures of withdrawn behaviour, somatic complaints, and anxious/depressed feelings. The Externalizing scale combines measures of delinquent behaviour and aggressive behaviour. Achenbach (1991b) reported that these groupings of scales reflected a distinction that had been detected through multivariate analyses. The total problem score is an amalgamation of each of the behaviour scales on the instrument.

As shown in Table 4, attachment was significantly correlated with each of the internalizing (χ^2 (1) = 7.07, $p<.01$), externalizing (χ^2 (1) = 9.82, $p<.01$), and the total problem scores (χ^2 (1) = 9.33, $p<.01$) attained by subjects. This finding demonstrates a significant relationship between attachment type in childhood (secure versus insecure) and clinically maladaptive behaviour in adolescence. The pattern of results does converge and suggests further evidence for the criterion-related validity of the AAS as a measure of attachment. The pattern of findings from this pilot study indicates evidence for the validity of the attachment scale of the AAS.

3.4.4 Discussion

As little work has been done to assess the long-term effects of childhood attachment, and no adequate instrument had yet been developed, it was necessary to develop and pilot test an instrument aimed at assessing and examining the long-term effects of secure and insecure childhood attachment. The pilot study was conducted to establish the psychometric properties of the AAS.

Adequate internal consistency, using Cronbach's alpha, was found for all of the variables used in the AAS. Criterion-related validity coefficients for the attachment scale in the AAS were consistent and significant. The psychometric

Table 4

Childhood Attachment and the Youth Self Report Subscales for the Pilot Study

		Attachment	
		Secure	Insecure
Variable		n[a] (%)[b]	n[a] (%)[b]
1. Internalizing**	Normal	19 (90.5)	2 (9.5)
	Clinical	3 (42.9)	4 (57.1)
2. Externalizing**	Normal	20 (95.2)	1 (4.8)
	Clinical	3 (42.9)	4 (57.1)
3. Total Problem** Score	Normal	14 (66.7)	7 (33.3)
	Clinical	0 (0)	7 (100)

[a] Number of subjects within this category

[b] Percentage of subjects within this category

* $p<.05$; ** $p<.01$; ***$p<.001$

properties established for the AAS indicate that it is a valid and reliable instrument and can thus be used for study two, the main phase of the study. It is further proposed that since the data are highly reliable and very sound, the data collected in the pilot version of the present study will be considered for use in the analysis for the main study.

CHAPTER 4

MAIN STUDY: METHOD AND RESULTS

The findings of the present work are reported in this chapter. The results are divided into five main sections: (1) Univariate analysis, (2) Multivariate analysis, (3) Evaluation of research questions, (4) Testing of the Latent Variable Model, and (5) Computer interaction evaluation. Appendix C contains further analysis of the psychometric properties of the AAS employing the complete sample.

The findings from the pilot study indicated that the research methods were sound. Accordingly, the main study was conducted employing the same methods as the pilot study. The same instruments were used, and the triad of adolescent and both parents were required to participate if the parents were in contact with their child. Data for the main study were gathered in between January and March of 1993. The average length of time of meeting per family was 90 minutes.

4.1 Description of the Sample

Preliminary analyses indicated that when the five major variables (age, gender, clinical status, socioeconomic status, and ethnicity) were examined, the pilot and main samples were comparable. Accordingly, the groups were combined for a total main sample of 138 adolescents. The description of the total sample is summarized in Table 5. This sample consisted of 138 adolescents along with their parents where the adolescents had contact with their parents.

Adolescent subjects for both clinical and community groups ranged in age from 12 to 17 years. The mean age for the clinical group was 14.32 with a standard deviation of 1.40. The mean age of the community group was 14.67 with a standard deviation of 1.82. Therefore, for the total sample of adolescent subjects, the ages ranged from 12 to 17 years with a mean age 14.54 years and a

Table 5

Descriptive Characteristics of the Main Study*

	Clinical Group		Community Group		Total	
Variable	n[a]	(%)[b]	n[a]	(%)[b]	n[a]	(%)[b]
Gender: Adolescents						
Male	25	(39.1)	39	(60.9)	64	(100)
Female	30	(40.1)	44	(59.9)	74	(100)
Family Constellation						
Family triads	21	(20.2)	83	(79.8)	104	(100)
Adolescent-mother dyads	19	(100)	0	(0)	19	(100)
Adolescent-father dyads	8	(100)	0	(0)	8	(100)
Adolescent only	7	(100)	0	(0)	7	(100)
Repeated Grades						
Zero	33	(28.9)	81	(71.1)	114	(100)
One	20	(90.1)	2	(9.9)	22	(100)
Two or more	2	(100)	0	(0)	2	(100)
Ethnicity						
Caucasian	40	(34.8)	75	(65.2)	115	(100)
Metis	8	(66.7)	4	(33.3)	12	(100)
Asian	2	(66.7)	1	(33.3)	3	(100)
Black	1	(100)	0	(0)	1	(100)
East Indian	0	(0)	1	(100)	1	(100)
Aboriginal	1	(100)	0	(0)	1	(100)
Mixed	1	(100)	0	(0)	1	(100)
Other	2	(50.0)	2	(50.0)	4	(100)
Socioeconomic Status						
Entrepreneurial or professional	18	(36.0)	32	(64.0)	50	(100)
Skilled labour	8	(15.1)	45	(84.9)	53	(100)
Unskilled labour/ unemployed	4	(80.0)	1	(20.0)	5	(100)

[a] Number of subjects within this category

[b] Percentage of subjects within this category

*Ages for the clinical group ranged from 12 to 17 years, mean age = 14.32, standard deviation = 1.40. For the community group, the ages also ranged from 12 to 17 years, with a mean = 14.67, and standard deviation = 1.82. For the total pilot sample, ages ranged from 12 to 17 years, mean age = 14.54, standard deviation = 1.68 years.

standard deviation of 1.68 years. Twenty-five of the clinical adolescents were male and 30 were female. Thirty-nine of the community group adolescents were male and 44 were female. For the sample then, 64 of the adolescent subjects were male and 74 were female. Nineteen clinical group subjects had contact with their mothers only and eight had contact with their fathers only. Seven of the 12 clinical group adolescents had no contact with their mother or father and thus data were gathered from the adolescents alone. All of the 83 community group adolescents had contact with both parents. Therefore, there were a total of 104 family triads, 19 adolescent-mother dyad, eight adolescent-father dyad, and seven adolescents without parental contact. Of the 55 clinical group subjects, 33 had never repeated a grade in school. Twenty had repeated once and two had repeated two or more times. Eighty-one of the 83 community group subjects had never been required to repeat a grade, while two had been required to do so once. Thus, of the 138 adolescents, 22 had been required to repeat a grade in school once and two subjects repeated twice or more. There were 40 clinical subjects who were Caucasian, eight were Metis, two were Asian, one was Black, one was Aboriginal, one was racially mixed, and two were of another unspecified race. One clinical subject did not respond to this question. Seventy-five of the community subjects were Caucasian, four were Metis, one was Asian, one was East Indian, and two were of another unspecified race. For the total sample then, most of the subjects were Caucasian ($\underline{n}$ = 115) with the next most frequent categories being Metis ($\underline{n}$ = 12). There were three Asian subjects and one of each of Black, East Indian, Aboriginal, and Mixed races. The mixture of races was not specified by the subjects.

Socioeconomic status was determined by using father's occupation. This was divided into three categories. Fifty (36.3%) subjects were from an entrepreneurial or professional background. As mentioned earlier, an entrepreneurial background was defined as the father having his own business, or working in a professional field such as law, medicine, teaching and so on. Fifty-three (38.4%) subjects had fathers who were employed as skilled labourers, defined as electricians, plumbers, carpenters and so on. Five (3.6%) subjects came from homes where the father worked either as an unskilled labourer, or was unemployed. Twenty-six (18.8%) subjects did not have contact with their fathers, and four (2.8%) subjects failed to answer this question.

In the main study, data were available for a more specific examination of the clinical presentation of the subjects. The categories available, and therefore used, in the YSR were: 1) Withdrawn, 2) Somatic Complaints, 3) Anxious/Depressed, 4) Social Problems, 5) Thought Problems, 6) Attention Problems, 7) Delinquent Behaviour, and 8) Aggressive Behaviour. Five subjects scored within the clinical range of the Withdrawn scale, 14 scored within the clinical range of the Somatic Complaints scale, 18 had scores in the clinical range for Anxiety/Depression, eight demonstrated a clinical level of Social Problems, five scored in the clinical range for Thought Problems, nine demonstrated clinical levels of Attention Problems, 14 subjects scored in the clinical range for Delinquent Behaviour, and eight subjects had scores within the clinical range for aggression.

The same manner used in the pilot study for determining the direction of clinical presentation of the 55 subjects was used in the main study. There were 31 clinical subjects presenting with internalizing problems, 20 clinical subjects presenting with externalizing difficulties, and 48 clinical subjects with Total Problems Scores in the clinical ranges. As discussed for the pilot study, subjects can demonstrate clinical scores in more than one area which explains the overlap of scores demonstrated here.

4.2 Univariate Analysis

Given the results and findings reported in chapter two it was determined that many of the samples used in research were from countries other than Canada. In an effort to determine whether or not findings from a Canadian sample would reflect those found in other countries a series of univariate analyses were conducted. In these analyses the relationships between the nine variables identified in the literature (see below), measured with the AAS, and attachment as reported by the adolescents were examined. Since the data were nominal, contingency table analyses were conducted using chi-square as the test statistic to examine the strength of the relationships.

This section is divided into nine subsections. These subsections are: (1) Separation, (2) Neglect, (3) Parental Involvement, (4) Blame, (5) Threats, (6) Physical abuse, (7) Sexual abuse, (8) Socioeconomic status, and (9) Moves.

4.2.1 Separation

Three levels of separation were assessed in the present study. These were (a) nonparental care before regular attendance in school, (b) long-term separation from either and/or both parents before the child turned 10 years of age, and (c) permanent separation from either and/or both parents.

4.2.1a Regular nonparental care. There was a significant relationship between nonparental care and attachment ($\chi^2(1) = 6.45$, $p<.05$). As shown in Table 6 (variable 1), a greater proportion of adolescents who reported receiving nonparental care on a regular basis prior to kindergarten demonstrated insecure attachment than adolescents who were only occasionally separated from their parents (35% vs. 16.7%).

Within the group of subjects who received regular nonparental care (n=59), the number of hours per day (variable 2) of such care these children

Table 6

Relationship of Childhood Attachment and Separation

		Attachment					
		Secure		Insecure			
Variable		n[a]	(%)[b]	n[a]	(%)[b]	χ^2	alpha
1. Regular nonparental Care	Occasional	65	(83.3)	13	(16.7)	6.45	.011
	Regular	38	(64.4)	21	(35.6)		
2. Number of hours per day	< 4 hours	19	(61.3)	12	(38.7)	1.15	.562
	5-8 hours	14	(73.7)	5	(26.3)		
	> 8 hours	5	(55.6)	4	(44.4)		
3. Number of days per week	< 3 days	7	(41.2)	10	(58.8)	5.92	.015
	> 3 days	32	(74.4)	11	(25.6)		
4. Place of surrogate care	Child's home	13	(54.2)	11	(45.8)	3.59	.166
	Other home	19	(79.2)	5	(20.8)		
	Elsewhere	7	(58.3)	5	(41.7)		
5. Surrogate caregiver	Family	12	(60.0)	8	(40.0)	2.50	.286
	Institution	24	(77.4)	7	(22.6)		
	Varied	5	(55.6)	4	(44.4)		
6. Long-term separation from both parents	1- 4 weeks	21	(84.0)	4	(16.0)	3.20	.074
	> 4 weeks	3	(50.0)	3	(50.0)		
7. Reason for long-term separation from both parents	Work or holiday	21	(87.5)	3	(12.5)	4.94	.026
	Marital or illness	4	(50.0)	4	(50.0)		
8. Long-term separation from mother only	< 1 week	70	(82.4)	15	(17.6)	4.30	.038
	> 1 week	15	(62.5)	9	(27.5)		
9. Length of time for separation from mother	1 - 4 weeks	12	(66.7)	6	(33.3)	.53	.465
	> 4 weeks	3	(50.0)	3	(50.0)		
10. Reason for long-term separation from mother	Work or holiday	8	(75.0)	4	(25.0)	.18	.673
	Marital or illness	7	(58.3)	5	(41.7)		
11. Long-term separation from father only	No	54	(88.5)	7	(11.5)	8.44	.004
	Yes	30	(65.2)	16	(24.8)		
12. Length of time for separation from father	1 - 4 weeks	24	(77.4)	7	(22.6)	7.32	.007
	> 4 weeks	5	(35.7)	9	(64.3)		
13. Reason for long-term separation from father	Work or holiday	23	(74.2)	8	(25.8)	3.38	.066
	Marital or illness	7	(46.7)	8	(53.3)		
14. Permanent separation from either or both parents	Not permanent	97	(85.8)	16	(13.2)	42.56	.001
	Permanent	4	(19.0)	17	(71.0)		

[a] Number of subjects in this category

[b] Percentage of subjects in this category

received was not related to attachment ($\chi^2(2) = 1.15$, $p<.60$). Oddly, a higher proportion of children who received such care one or two days per week demonstrated insecure attachment than did children who received nonparental care three or more days each week ($\chi^2(1) = 5.92$, $p<.05$; 58.8% vs. 25.6%, Table 6, variable 3). This finding may reflect a Type 1 error as the χ^2 is comparatively small but there is no clear explanation for this finding. It did not make a difference whether the child was cared for at home, someone else's home or elsewhere ($\chi^2(2) = 3.59$, $p<.20$, variable 4) and it made no difference if the child was cared for by a family member, a day care institution, or some combination of these ($\chi^2(2) = 2.50$, $p<.29$, variable 5).

4.2.1b Long-term separation. Long-term separation from both parents before the adolescent turned 10 years of age was not significantly related to attachment ($\chi^2(1) = 3.20$, $p<.10$, see Table 6, variable 6). However, the reason for the separation was significantly related to attachment ($\chi^2(1) = 4.94$, $p<.05$, see Table 6, variable 7). It appears that adolescents who were separated from both of their parents at the same time because of either marital separation or illness (theirs or their parents') have a higher proportion of attachment difficulties than do children who are separated from their parents for work or holidays (50.0% vs. 12.5%).

As shown in Table 6, long-term separation from mother only (variable 8) was significantly associated with insecure attachment ($\chi^2(1) = 9.30$, $p<.05$). Further analysis revealed that the length of time of separation from mother only (1-4 weeks vs. more than four weeks) was nonsignificant in its relationship to attachment ($\chi^2(1) = .53$, $p<.50$, variable 9). The reason for the separation from mother only also was nonsignificant in its relationship to attachment ($\chi^2(1) = .18$ $p<.70$, variable 10). These findings suggest that the experience of separation from mother is more influential in leading to insecure attachment than in the length of time (after one week) or the reason for separation.

Long-term separation from father only, prior to the age of 10 years, was significant in its association with attachment ($\chi^2(1) = 8.44$, $p<.01$, see Table 6, variable 11). Within group comparisons ($n=45$) demonstrated that adolescents who reported separation from their fathers only for a period of more than four weeks were assessed with insecure attachment proportionately more often than adolescents reporting separation from father for a period of one to four weeks ($\chi^2(1) = 7.32$, $p<.01$; 64.3% vs. 22.6%, see Table 6, variable 12). The reason was for the separation was not found to be significant in relation to attachment (variable 13).

4.2.1c Permanent Separation. Permanent separation from either or both parents were grouped together because of the low numbers of subjects who experienced permanent separation from their parents ($n=21$). As shown in Table 6 (variable 14), permanent separation was significant in relation to attachment ($\chi^2(1) = 42.56$, $p<.001$). A greater proportion of adolescents who reported being permanently separated from either or both parents prior to the age of 10 years demonstrated insecure attachment to the remaining or subsequent parents than did adolescents who did not report permanent separation (71.0% vs. 13.2%).

4.2.2 Neglect

The subscale of neglect was divided into three sections: 1. felt rejection, 2. withholding of love, and 3. ridicule of children). These sections were included because of their theoretical link with the concept of neglect and because they were discussed in this realm in the theoretical literature reviewed in chapter two.

Each section is discussed separately.

4.2.2a Felt rejection. This subsection presents the results of comparisons of the child's felt rejection (by both parents, mother only, and then father only) with attachment. Felt rejection was analyzed in two categories: rarely and regularly. As shown in Table 7, felt rejection from both parents (variable 1) was significantly associated with attachment ($\chi^2(1) = 11.18$, $p<.001$). Proportionately more adolescents who reported experiencing felt rejection regularly by both parents demonstrated insecure attachment than did adolescents who reported experiencing felt rejection rarely (45.5% vs. 14.3%).

Felt rejection from mother only (variable 2) was also significantly associated with attachment ($\chi^2(1) = 13.79$, $p<.001$). Proportionately more adolescents who reported experiencing felt rejection regularly from mother only demonstrated insecure attachment than adolescents experiencing felt rejection rarely (62.5% vs. 19.8%).

Felt rejection from father only (variable 3) was also significantly associated with attachment ($\chi^2(1) = 32.37$, $p<.001$). Proportionately more adolescents who reported experiencing felt rejection regularly from father only demonstrated insecure attachment than adolescents experiencing felt rejection rarely (60.0% vs. 9.7%).

4.2.2b Withholding of love. The present subsection presents the results of comparisons of feelings that love was withheld from the subject by both parents, mother only, and then father only, with attachment. Withheld love was analyzed in two categories: rarely and regularly.

Table 7

Relationship of Childhood Attachment and Neglect

		Attachment			
		Secure	Insecure		
Variable		n[a] (%)[b]	n[a] (%)[b]	χ^2	alpha
1. Felt rejection from both parents	Rarely	90 (85.7)	15 (14.3)	11.18	.001
	Regular	12 (54.5)	10 (45.5)		
2. Felt rejection from mother only	Rarely	97 (80.2)	24 (19.8)	13.79	.001
	Regular	6 (37.5)	10 (62.5)		
3. Felt rejection from father only	Rarely	93 (90.3)	10 (9.7)	32.37	.001
	Regular	10 (40.0)	15 (60.0)		
4. Felt withholding of love from both parents	Rarely	96 (80.7)	23 (19.3)	.11	.741
	Regular	6 (85.7)	1 (14.3)		
5. Felt withholding of love from mother only	Rarely	94 (77.0)	28 (23.0)	1.53	.216
	Regular	8 (61.5)	5 (38.5)		
6. Felt withholding of love from father only	Rarely	97 (83.6)	19 (16.4)	6.75	.009
	Regular	5 (50.0)	5 (50.0)		
7. Felt ridiculed by both parents	Rarely	94 (82.5)	20 (17.5)	1.76	.185
	Regular	8 (66.7)	4 (33.3)		
8. Felt ridiculed by mother only	Rarely	93 (75.0)	31 (25.0)	.25	.614
	Regular	9 (81.8)	2 (18.2)		
9. Felt ridiculed by father only	Rarely	89 (84.8)	16 (15.2)	5.93	.015
	Regular	13 (61.9)	8 (38.1)		

[a] Number of subjects in this category

[b] Percentage of subjects in this category

As shown in Table 7, withheld love from both parents (variable 4) was not significantly related to attachment ($\chi^2(1) = .11$, $p<.75$). Withheld love from mother (variable 5) was not significantly associated with attachment ($\chi^2(1) = 1.53$, $p<.22$). However, withheld love from father only (variable 6) was significantly associated with attachment ($\chi^2(1) = 6.75$, $p<.01$). Proportionately more adolescents who reported that their fathers regularly withheld love from them demonstrated insecure attachment than adolescents whose fathers rarely withheld their love (50.0% vs. 16.4%).

4.2.2c Ridicule of children. The present subsection presents the results of comparisons of feelings that the child was ridiculed or made fun of by both parents, mother only, and then father only, with attachment. Ridicule was analyzed in two categories: rarely and regularly.

As reported in Table 7, neither ridicule from both parents together (variable 7) nor ridicule from mother only (variable 8) was significantly associated with attachment ($\chi^2(1) = 1.76$, $p<.20$, $\chi^2(1) = .25$, $p<.61$). However, regular ridicule by father (variable 9) was significantly associated with attachment ($\chi^2(1) = 5.93$, $p<.05$). Proportionately more adolescents who reported being ridiculed on a regular basis by their fathers demonstrated insecure attachment than adolescents who reported rarely experiencing ridicule by father (38.1% vs. 15.2%).

4.2.3 Parental Involvement

The subscale of parental involvement was divided into three sections (1. perceived parental support, 2. perceived parental affection, and 3. physical proximity. These sections were included because of their theoretical link with parental involvement with their children and because they were discussed in this realm in the theoretical literature reviewed in chapter two. Each section is discussed separately.

4.2.3a Perceived parental support. This perceived parental support from both parents, mother only, and then father only, with attachment are presented here. Perceived parental support was analyzed in two categories: rarely and regularly.

As shown in Table 8, parental support by both parents (variable 1) was significantly associated with attachment ($\chi^2(1) = 39.01, p<.001$). Proportionately more adolescents reporting support from both parents on a regular basis demonstrated secure attachment than adolescents reporting only rare support (87.2% vs. 9.1%). Further analysis demonstrated that proportionately more adolescents who reported receiving parental support from both parents at times when it was wanted or needed (variable 2), demonstrated secure attachment (85.7% vs. 0%, $\chi^2(1) = 24.16, p<.001$). One cell in this Table is empty. It is theoretically appropriate that that cell remain empty, however, as none of the adolescents who received sporadic or no parental support when they needed it, demonstrated secure attachment. That is, only adolescents who received parental support at times when they needed, demonstrated secure attachment.

Also in Table 8, emotional support from mother only (variable 3) was significantly associated with attachment ($\chi^2(1) = 11.52, p<.001$). Proportionately more adolescents who reported receiving support from mother demonstrated secure attachment than adolescents receiving only rare emotional support from their mothers (77.9% vs. 16.7%). Very few ($n = 1$) adolescents who experienced little emotional support from their mothers demonstrated a secure attachment. Further analysis also demonstrated that proportionately more adolescents who experienced emotional support from mother at times when it was wanted or needed (variable 4) demonstrated secure attachment than other adolescents

Table 8

Relationship of Childhood Attachment and Perceived Parental Support

		Attachment					
		Secure		Insecure			
Variable		n[a]	(%)[b]	n[a]	(%)[b]	χ^2	alpha
1. Emotional support from both parents	Rarely	1	(9.1)	10	(90.9)	39.01	.001
	Regular	102	(87.2)	15	(11.8)		
2. Emotional support from both parents when needed	Rarely	0	(0)	5	(100)	24.16	.001
	Regular	102	(85.7)	17	(14.3)		
3. Emotional support from mother	Rarely	1	(16.7)	5	(83.3)	11.52	.001
	Regular	102	(77.9)	29	(22.1)		
4. Emotional support from mother when needed	Rarely	0	(0)	3	(100)	9.48	.002
	Regular	102	(77.3)	30	(22.7)		
5. Emotional support from father	Rarely	3	(18.8)	13	(81.2)	44.32	.001
	Regular	100	(89.3)	12	(10.7)		
6. Emotional support from father when needed	Rarely	4	(40.0)	6	(60.0)	17.12	.001
	Regular	97	(89.0)	12	(11.0)		
7. Parental affection from mother	Rarely	4	(66.7)	2	(33.3)	.214	.621
	Regular	99	(75.6)	32	(24.4)		
8. Parental affection from father	Rarely	5	(25.0)	15	(75.0)	46.40	.001
	Regular	98	(90.7)	10	(9.3)		
9. Physical proximity to mother	Rarely	5	(71.4)	2	(28.6)	.06	.813
	Regular	98	(75.4)	32	(24.6)		
10. Enough physical proximity to mother	Not enough	32	(65.3)	17	(24.7)	3.99	.046
	Enough	71	(80.7)	17	(19.3)		
11. Physical proximity to father	Rarely	19	(54.3)	16	(45.7)	21.01	.001
	Regular	84	(90.3)	9	(9.7)		

[a] Number of subjects in this category

[b] Percentage of subjects in this category

(77.3% vs. 0%, $\chi^2(1) = 9.48$, $p<.01$).

Emotional support from father only (variable 5) was significantly associated with attachment ($\chi^2(1) = 44.32$, $p<.001$). Proportionately more adolescents who reported receiving support from their fathers demonstrated secure attachment than adolescents receiving only rare emotional support from their fathers (89.3% vs. 18.8%). Very few ($n = 3$) adolescents who experienced little emotional support from their fathers demonstrated a secure attachment. Further analysis also demonstrated that proportionately more adolescents who experienced emotional support from father at times when it wanted or needed (variable 6) demonstrated secure attachment than other adolescents (89.0% vs. 40.0%, $\chi^2(1) = 17.12$, $p<.001$).

4.2.3b Perceived parental affection. This results of comparisons of perceived parental affection from mother only, and then father only, with attachment are reported here. Perceived parental affection was analyzed in two categories: rarely and regularly. As shown in Table 8, regular affection from mother (variable 7) was not significantly ($\chi^2(1) = .24$ $p<.65$) associated with attachment. It is worthy to note, however, that very few children (n=6) reported rarely receiving affection from their mother. Parental affection from father (variable 8) was significant in relation to attachment ($\chi^2(1) = 46.4$, $p<.001$). Proportionately more adolescents who reported rarely receiving affection from their fathers demonstrated insecure attachment than those reporting regular affection from their fathers (75.0% vs. 9.3%).

4.2.3c Physical proximity. In this subsection, the results of comparisons of physical proximity to mother only and then father only with attachment are presented. Physical proximity was operationalized as being held or hugged.

Physical proximity was analyzed in two categories; rarely and regularly. As shown in Table 8, physical proximity to mother (variable 9) was not significantly related to attachment ($\chi^2(1) = .06$, $p<.8$). Enough physical proximity to mother (variable 10) was significantly associated with attachment ($\chi^2(1) = 3.99$, $p<.05$). Adolescents wishing to be held by their mothers more often were proportionately more likely to demonstrate insecure attachment than those who reported feeling enough physical proximity to their mothers (24.7% vs. 19.3%). Also shown in Table 8, physical proximity to father (variable 11) was significantly ($\chi^2(1) = 21.01$, $p<.001$) associated with attachment. Proportionately more adolescents who reported rare proximity with their fathers demonstrated insecure attachment than other adolescents (45.7% vs. 9.7%).

4.2.4 Blame

Blame was operationalized as children perceiving that parents blamed them for parental illness. Blame was categorized in the analysis as rarely and regularly. As shown in Table 9, both parents together blaming children for parental illness (variable 1) was not significantly related to attachment ($\chi^2(1) = 2.56$, $p<.11$). Mothers and fathers individually blaming children for parental illness, as shown in Table 9 (variables 2 and 3 respectively), were both significantly associated with attachment ($\chi^2(1) = 8.92$, $p<.01$ and $\chi^2(1) = 4.29$, $p<.05$, respectively). Proportionately more adolescents who reported being blamed for parental illness demonstrated insecure attachment (66.7% vs. 22.0% for mother and 66.7% vs. 18.5% for father).

4.2.5 Threats

Three specific threats were used in the present study and are discussed in separate subsections below. These are (a) threat of abandonment, (b) threats to

Table 9

Relationship of Childhood Attachment and Blame

		Attachment					
		Secure		Insecure			
Variable		n[a]	(%)[b]	n[a]	(%)[b]	χ^2	alpha
1. Blame for parental illness from both parents	Rarely	93	(82.3)	20	(17.7)	2.56	.110
	Regular	9	(64.3)	5	(35.7)		
2. Blame for parental illness from mother only	Rarely	99	(78.0)	28	(22.0)	8.92	.003
	Regular	3	(33.3)	6	(66.7)		
3. Blame for parental illness from father only	Rarely	101	(81.5)	23	(18.5)	4.29	.038
	Regular	1	(33.3)	2	(66.7)		

[a] Number of subjects in this category

[b] Percentage of subjects in this category

harm self, and (c) threats to harm subjects.

4.2.5a Threat of abandonment. The threat of abandonment by both parents,mothers, and fathers are presented separately below. Threats of abandonment by both parents (variable 1) was not significant in its association with attachment ($\chi^2(1) = 2.52$, $p<.12$, see Table 10).

Results for threats of abandonment by mothers (variable 2) are presented in Table 10. The threat of abandonment from mother was significantly associated with attachment ($\chi^2(1) = 14.32$, $p<.001$). Of the adolescents who reported receiving regular threats of abandonment by their mothers, more demonstrated insecure attachment (87.8% vs. 12.3%).

Also in Table 10, the threat of abandonment by father (variable 3) was significantly associated with attachment ($\chi^2(1) = 20.43$, $p<.001$). Those adolescents who received regular threats of abandonment from their fathers demonstrated insecure attachment proportionately more often than other subjects (85.7% vs. 15.8%).

4.2.5b Threats to harm self. Threats by both parents, mothers, and fathers to harm themselves are presented separately. As shown in Table 10, threats by both parents to harm themselves (variable 4) was significantly associated with attachment security ($\chi^2(1) = 4.11$, $p<.05$). Only one set of parents together threatened to harm themselves. As shown in Table 10, the child who reported experiencing the threat demonstrated insecure attachment.

The number of mothers who threatened to harm themselves (variable 5) was small ($n = 3$), with two of the three adolescents who experienced this demonstrating an insecure attachment. Results were not significant, but further sampling may produce clearer results. No fathers in the present sample threatened to harm themselves.

Table 10

Relationship of Childhood Attachment and Threats
and Childhood Attachment and Physical Abuse

		Attachment					
		Secure		Insecure			
Variable		n[a]	(%)[b]	n[a]	(%)[b]	χ^2	alpha
1. Threatened abandonment from both parents	Rarely	98	(81.7)	22	(18.3)	2.52	.113
	Regular	4	(57.1)	3	(42.9)		
2. Threatened abandonment from mother	Rarely	100	(78.7)	27	(12.3)	14.32	.001
	Regular	2	(22.2)	7	(87.8)		
3. Threatened abandonment from father	Rarely	101	(84.2)	19	(15.8)	20.43	.001
	Regular	1	(14.3)	6	(85.7)		
4. Threat to harm self from both parents	Rarely	102	(81.0)	24	(19.0)	4.11	.043
	Regular	0	(0)	1	(100)		
5. Threats to harm self from mother	Rarely	101	(75.9)	32	(24.1)	2.84	.092
	Regular	1	(33.3)	2	(66.7)		
6. Threats to harm child from mother	Rarely	98	(80.3)	24	(19.7)	15.81	.001
	Regular	5	(33.3)	10	(66.7)		
7. Threats to harm child from father	Rarely	98	(85.2)	17	(14.8)	18.50	.001
	Regular	4	(33.3)	8	(66.7)		
8. Physical Abuse	No	88	(77.9)	15	(22.1)	22.97	.001
	Yes	14	(43.8)	18	(56.2)		

[a] Number of subjects in this category

[b] Percentage of subjects in this category

4.2.5c Threats to harm subjects. Threats to harm subjects by mothers and fathers are presented separately. Threats of harm from mothers (variable 6) was significantly associated with attachment ($\chi^2(1) = 15.81$, $p<.001$, see Table 10). Proportionately more adolescents who reported experiencing threats of harm from their mothers on a regular basis demonstrated insecure attachment than other subjects (66.7% vs. 19.7%). The threat of harm from fathers (variable 7) was also significantly related to attachment ($\chi^2(1) = 18.50$, $p<.001$). Proportionately more adolescents who reported that they regularly received such threats demonstrated insecure attachment than other subjects (66.7% vs. 14.8%).

4.2.6 Physical Abuse

As reported in Table 10, physical abuse (variable 8) was significantly associated with attachment security ($\chi^2(1) = 22.97$, $p<.001$). The demographic relationship between the subject and perpetrator was not significantly related to attachment.

4.2.7 Sexual Abuse

Violato and Genuis (1993) defined sexual abuse as unwanted sexual contact with a child. Other sexually related experiences, such as exhibitionism, talking to children in a sexual manner, and demonstrating sex in front of children, are all classified as emotional abuse in a sexual manner. Each of the above experiences were asked in the present study and are presented below.

4.2.7a Emotional abuse in a sexual manner. As reported in Table 11, each of showing pornographic magazines ($\chi^2(1) = 9.05$, $p<.01$; variable 1), pornographic videos ($\chi^2(1) = 6.45$, $p<.05$; variable 2), talking to children in a sexual manner ($\chi^2(1) = 9.05$, $p<.01$; variable 3), and showing one's sex parts to children ($\chi^2(1) = 7.72$, $p<.01$; variable 4) was significantly related to attachment

Table 11

Relationship of Childhood Attachment and Sexual Abuse Prior to Age 10 Years and Childhood Attachment and Moves

		Attachment					
		Secure		Insecure			
Variable		n[a]	(%)[b]	n[a]	(%)[b]	χ^2	alpha
1. Shown pornographic magazines to children	No	104	(83.2)	21	(16.8)	9.05	.003
	Yes	5	(45.5)	6	(54.5)		
2. Shown pornographic videos to children	No	106	(82.2)	23	(17.8)	6.45	.011
	Yes	3	(42.9)	4	(56.4)		
3. Talk to children in a sexual manner	No	104	(83.2)	21	(16.8)	9.05	.003
	Yes	5	(45.5)	6	(54.5)		
4. Shown sex parts to children	No	105	(82.7)	22	(17.3)	7.72	.005
	Yes	4	(44.4)	5	(55.6)		
5. Sex contact with children	No	106	(82.8)	22	(17.2)	9.72	.002
	Yes	3	(37.5)	5	(62.4)		
6. Moves between cities	<0-2	79	(81.4)	18	(18.6)	6.98	.008
	>2	24	(60.0)	16	(40.0)		

[a] Number of subjects in this category

[b] Percentage of subjects in this category

security. For each of these experiences, the relationship to the perpetrator was not significantly related to attachment. To clarify, attachment was measured in relation to parents. The perpetrator was not necessarily a parent or other family member. Therefore, such abuse at the hands of anyone is significantly related to insecure attachment to parents.

One possibility for this is that sexual abuse is yet another indication of intrafamilial instability which does result in insecure attachment. Another is that the abusive experience provides a serious challenge to the intrafamilial stability and deterioration is likely unless appropriate support and understanding are offered to the child.

4.2.7b Sexual contact. As shown in Table 11, unwanted sexual contact with children younger than 10 years of age (variable 5) was significantly ($\underline{\chi}^2(1) = 9.72$, $\underline{p}<.01$) related to attachment. That is, significantly more adolescents who had experienced such contact demonstrated insecure attachment. As above, relationship to perpetrator made no difference. This finding, however, is consistent with the theory forwarded in the present dissertation as well as that of previous works (Violato & Genuis, 1992).

4.2.8 Socioeconomic Status

Socioeconomic status was measured by fathers' type of work. Work types were divided into three separate areas. These were (a) professional or owning a business, (b) skilled labour, and (c) unskilled labour or unemployed. Socioeconomic status was not significantly related to attachment security ($\underline{\chi}^2(2) = .23$, $\underline{p}<.90$) in the present sample.

4.2.9 Moves

Moves within and between towns or cities were included separately present study. As reported in Table 11, the number of moves between cities or towns (variable 6) was significantly ($\chi^2(1) = 6.98$, $p<.01$) related to attachment. Those adolescents who had moved more than three times before turning 10 years of age demonstrated insecure attachment significantly more often than other adolescents. Moves within the same city were not significantly related to attachment.

4.3 Multivariate Analysis

A stepwise discriminant analysis was employed to evaluate the validity of the psychopathology diagnosis (or lack of it) of the adolescent subjects. Some of the variables from the AAS, CBCL and, YSR as well as the composite variables were forced dichotomies. Accordingly, for the discriminant analysis the variables were intercorrelated using tetrachoric, biserial, and product moment correlations (see Bentler, 1992; Bollen, 1989; Bollen & Long, 1993; Mulaik, 1987; Pedhazur, 1982).

As discussed in chapter 3, the YSR and the CBCL are adequate instruments for assessing the clinical nature of adolescent psychopathology. These measures were derived empirically and were thus used as the determinant for clinical status if there was discrepancy between these measures and the clinician diagnosis.

Nine variables (Internalizing, Externalizing and Total problem score from the YSR and CBCL for each parent) were selected for entry into the discriminant analysis. Since there was a total of 370 subjects (adolescents, fathers, and mothers), the ratio of subjects to variables met the recommended minimum of 10 subjects per variable entered (Stevens, 1986). Missing data were handled by mean substitution procedures. The results are presented in Table 12.

Four of the variables, (1) internalizing from CBCL from fathers, (2) total problem score from YSR, (3) total problem score from CBCL from fathers, and (4)

Table 12

Stepwise Discriminant Analysis for Cross Validating Clinical Diagnosis with the Child Behaviour Checklist and the Youth Self Report

Part A:

Significant Variables in the Equation	Wilk's Lambda	p-level
Internalizing-fathers	.16	.001
Total problem score-Adolescents	.17	.001
Total problem score-fathers	.18	.001
Total problem score-mothers	.24	.001

Part B: Canonical Discriminant Function

Function	Eigenvalue	Canonical Correlation	Wilk's Lambda	Chi-Square	Degrees of Freedom	Significance
1	5.15	.92	.16	243.42	4	.001

Part C: Subject Classification Using the Derived Function

		Predicted Group Membership	
Actual Group	Number of Cases	Group 1 n^a (%)^b	Group 2 n^a (%)^b
Clinical	55	54 (98.2)	1 (1.8)
Non-clinical	83	3 (3.6)	80 (96.4)

Percent of "Grouped" cases correctly classified: 97.10%

Part D: Standardized Canonical Discriminant Function Coefficients

Variable	Coefficients
Internalizing-fathers	-.29
Total problem score-fathers	.76
Total problem score-mothers	.80
Total problem score-adolescents	.23

---

[a] Number of subjects in this category

[b] Percentage of subjects in this category

total problem score from CBCL from mothers, produced one significant discriminant function ($\chi^2(4) = 243.42$, $p < .001$). This is summarized in Parts A and B of Table 12.

Part C of Table 12 contains the results of the subject classification using the derived function. As can be seen, 97.1 percent of the subjects were correctly classified into group membership. These analyses then, provide confirmation that the groups, as diagnosed by the clinicians, could be used in all further analyses as they were verified by both the summary scales of the YSR and the CBCL in the stepwise discriminant analysis. Therefore, these results confirm both the clinical and normal groups both by the instruments and clinicians' diagnoses.

Part D of Table 12 contains the standardized canonical coefficients. The single discriminant function produced a canonical correlation, $r = .92$, which is a very high correlation.

4.4 Evaluation of Research Questions

Question 1: The first research question examined whether children assessed as having insecure attachment prior to the age of 10 years were significantly more likely to be assessed as suffering from some form of psychopathology in adolescence than were adolescents assessed as having secure attachment prior to the age of 10 years. To help answer this question, a stepwise discriminant analysis was conducted. Three variables (Children's assessment of their attachments, care as measured with the PBI and, overprotection as measured with the PBI) were selected for entry into the discriminant analysis. The results from this analysis are summarized in Table 13.

All three of the variables [(1) overprotection as measured with the PBI, (2) care as measured with the PBI and, (3) Children's assessment of their attachments] produced one significant discriminant function ($\chi^2(3) = 50.53$,

Table 13

Stepwise Discriminant Analysis for the Prediction of Clinical Diagnosis based on Attachment

Part A:

Significant Variables in the Equation	Wilk's Lambda	P-Level
Overprotection scale of PBI	.68	.001
Care scale of PBI	.69	.001
Attachment assessed by adolescents	.76	.001

Part B: Canonical Discriminant Function

Function	Eigenvalue	Canonical Correlation	Wilk's Lambda	Chi-Square	Degrees of Freedom	Significance
1	.46	.56	.68	50.53	3	.001

Part C: Subject Classification Using the Derived Function for the Prediction of Clinical Diagnosis based on Childhood Attachment

		Predicted Group Membership	
Actual Group	Number of Cases	Group 1 n[a] (%)[b]	Group 2 n[a] (%)[b]
Clinical	54	35 (64.8)	19 (35.2)
Non-clinical	83	6 (7.2)	77 (92.8)

Percent of "Grouped' cases correctly classified: 81.75%

Part D: Standardized Canonical Discriminant Function Coefficients

Variable	Coefficients
Attachment assessed by adolescents	.84
Care scale of the PBI	.60
Overprotection scale of the PBI	-.37

---

[a] Number of subjects in this category

[b] Percentage of subjects in this category

$p < .001$ as summarized in Parts A and B of Table 13.

Part C of Table 13 contains the results of the subject classification using the derived function; 81.75 percent of the subjects were correctly classified into group membership. These analyses then, indicate that the clinical and nonclinical groups can be significantly, but not perfectly, distinguished based on the measure of attachment. Although this is the case, it is more relevant to examine the results of a latent variable path analysis, as this type of analysis not only considers the relationship between attachment and psychopathology, it also expands the influences considered so as to account for a greater percentage of the variance and covariance involved in the development of adolescent psychopathology. Part D of Table 13 contains the standardized canonical coefficients. The single discriminant function produced a canonical correlation, $r = .56$.

As presented in Tables 5 and 18 (see Appendix C), and discussed in the previous chapter, attachment prior to the age of 10 years is significantly related to incidence of psychopathology in adolescence. In this analysis, the broad band measures (internalizing and externalizing) as well as the overall total problem score were used from the YSR. Attachment was significantly related to each of these measures. The significant findings obtained with both the multivariate and univariate analyses indicate strong support for the notion that children who are assessed as having insecure attachment prior to the age of 10 years are significantly more likely to be assessed with psychopathology in adolescence than are children who are assessed as having secure attachment.

Question 2: The second research question asked whether attachment style was predicted any differently if specific childhood events were experienced in relation to either or both parents. This question calls for an examination of the univariate findings reported in the present chapter. The findings indicate a negative answer to this question. The results demonstrate that childhood experiences with either or both parents have the capacity to strengthen or deteriorate the security of a child's attachment to both parents.

Question 3: The third research question asked if there were certain pathologies in adolescence which were significantly more reliably predicted by specific childhood experiences. In order to answer this question, a stepwise discriminant analysis was performed. Eleven variables were entered into the analysis as a result of each being found significant in relation to attachment in the univariate analyses. The variables analyzed were: 1) Moves between cities or towns, 2) Regular separation, 3) Long-term separation, 4) Permanent separation, 5) Felt rejection, 6) Threats of abandonment, 7) Blaming child for parental illness, 8) Parent threatening to harm self, 9) Parent threatening to harm child, 10) Physical abuse, and 11) Sexual abuse. Both the narrow and broad band scales of the YSR were used to group the subjects for the present question.

Two nonsignificant discriminant functions were derived ($\chi^2(6) = 11.19$, $p<.10$, and $\chi^2(2) = 4.20$, $p<.20$) as summarized in Parts A and B of Table 14.

Part C of Table 14 contains the results of the subject classification using the derived function where 68.7 percent of the subjects were correctly classified into group membership. Although this is better than chance (50%), statistically the result is not significant. These analyses then, demonstrate that the forms of psychopathology manifested by adolescents could not be predicted by specific childhood experiences. Part D of Table 14 contains the standardized canonical coefficients. The two nonsignificant discriminant functions produced canonical correlations of ($r = .29$ and $r = .23$ respectively).

4.5 Testing the Latent Variable Path Model

As indicated at the end of chapter two, a latent variable path model

Table 14

Stepwise Discriminant Analysis for the Prediction of Type of Psychopathology Based on Various Childhood Experiences

Part A:

Significant Variables in the Equation	Wilk's Lambda	P-Level
Long-term Separation	.92	.10
Sexual Abuse	.87	.10

Part B: Canonical Discriminant Function

Function	Eigenvalue	Canonical Correlation	Wilk's Lambda	Chi-Square	Degrees of Freedom	Significance
1	.09	.29	.87	11.19	6	.10
2	.05	.23	.95	4.2	2	.12

Part C: Subject Classification Using the Derived Function

		Predicted Group Membership			
Problem Score Actual Group n[a] (%)[b]	Number of Cases	Withdrawn n[a] (%)[b]	Internalizing n[a] (%)[b]	Externalizing n[a] (%)[b]	Total
Withdrawn	1	1 (100)	0 (0)	0 (0)	0 (0)
Internalizing	1	1 (100)	0 (0)	0 (0)	0 (0)
Externalizing	1	0 (0)	0 (0)	1 (100)	0 (0)
Total Problem Score	80	19(23.8)	0 (0)	6 (7.5)	55 (68.8)
Ungrouped Cases	53	9 (17)	0 (0)	2 (3.8)	42 (79.2)

Percent of "Grouped" cases correctly classified: 68.7%

Part D: Standardized Canonical Discriminant Function Coefficients

	Coefficients	
Variable	Function 1	Function 2
Long-term Separation	.88	.47
Sexual Abuse	-.51	.86

---

[a] Number of subjects in this category

[b] Percentage of subjects in this category

was proposed to account for developmental psychopathology. This model is depicted in Figure 1. To test the model, structural equation modelling techniques were employed using the EQS computer program (Bentler, 1992). These techniques allow for the simultaneous identification of both latent and measured variables as well as their residuals, intercorrelations and path coefficients. This is an extension of conventional path analysis and factor analyses because it allows for the integration of measurement and structural models (Bentler, 1992; Bollen, 1989; Bollen & Long, 1993).

To test the model, nine variables were selected as potentially identifying the three latent variables (Abuse (F1), Childhood Attachment (F2), and Social/Emotional Isolation (F3)). These are summarized in Figure 1 which specifies both the full measurement and structural model (Bollen, 1989). The nine measured variables (Other Close Adults, Parental Bonding Instrument, Psychopathology, Attachment, Parental Involvement, Moves, Physical Abuse, Neglect, Threats) were intercorrelated using tetrachoric, biserial and product-moment correlations (Bollen & Long, 1993; Bentler, 1992; Pedhazur, 1982). This correlation matrix, together with the variable standard deviations are summarized in Table 15. Using the algorithms from the EQS program, the model in Figure 1 was fit to the data in Table 16 (See Appendix D for the complete program control information and the algorithms) using arbitrary distribution least squares (ADLS) estimation, which is appropriate with mixed data involving both categorical and continuous variables (Bentler, 1992; Bollen & Long, 1993). The data in Table 16 is a variance - covariance matrix of the nine variables that are considered by the researcher to be theoretically appropriate for inclusion. These variables have adequate numbers of subjects who reported having the experience denoted by the variable and were found to

Table 15

Correlation Matrix with Standard Deviations for the Nine Variables in the Latent Variable Path Model

	ATT	PBI	DIAG	CLAD	INV	NEG	THR	PA	MOVES
ATT	1.00								
PBI	.03	1.00							
DIAG	.49	.18	1.00						
CLAD	-.51	-.13	-.32	1.00					
INV	.85	.12	.46	-.46	1.00				
NEG	.11	-.18	-.15	.08	.15	1.00			
THR	.13	.00	-.14	-.03	.20	.60	1.00		
PA	-.40	-.09	-.51	.30	-.26	.34	.24	1.00	
MOVES	-.35	-.13	-.45	.42	-.29	.15	.05	.42	1.00

Standard Deviations

ATT	5.8
PBI	6.4
DIAG	4.9
CLAD	6.9
INV	7.9
NEG	4.1
THR	1.6
PA	4.4
MOVES	2.7

Table 16

Data Entered for Analysis in the Latent Variable Path Analysis
Variance - Covariance Matrix

	ATT	PBI	DIAG	CLAD	INV	NEG	THR	PA	MOVES
ATT	33.64								
PBI	1.11	40.96							
DIAG	13.93	5.65	24.01						
CLAD	-20.41	-5.74	-10.82	47.61					
INV	38.95	6.07	17.81	-25.08	62.41				
NEG	2.62	-4.72	-3.01	2.26	4.86	16.81			
THR	1.21	0.00	-1.10	-0.33	2.53	3.94	2.56		
PA	-10.21	-2.53	-11.00	9.11	-9.04	6.13	1.70	19.36	
MOVES	-5.48	-2.25	-5.95	7.83	-6.19	1.66	0.22	4.99	7.29

have significant relationships with adolescent attachment through the univariate analyses reported earlier in this chapter.

The overall fit of the model to the data was good, producing an Comparative Fit Index (CFI) = .984. The CFI can be interpreted in a fashion similar to interpreting a reliability coefficient (Bentler, 1992). Thus more than 98 percent of the variance and covariance in the data is accounted for by the proposed model. Further evidence of the model's excellent overall fit comes from the average standardized residuals of .25.

All three latent variables (F1, F2, and F3) in Figure 1 are clearly identified. F1 has loadings from five variables (THRT, NEG, PA, INV, and ATT) which all are theoretically relevant to an Abuse construct. The loadings range from a low of .24 (INV) to a high of .69 (THRT) (see Figure 1). The loadings on F2 range from .22 to .70 With the possible exception of Neglect (NEG = .95), none of the theta-delta coefficients (residuals) on these variables are very large (THRT = .73, ATT = .87, INV = .82, PA = .82). Three of the above exogenous variables (PA, INV, and ATT) also serve to identify Childhood Attachment (F2) as they have split loadings. MOVES is the fourth exogenous variable loading on ATT (MOVES = .70). The loading for the variable MOVES is moderate in size (MOVES = .44). The latent variable of Social/Emotional Isolation (F3) has three exogenous variables loading on to it (CLAD, PBI, and MOVES). MOVES, which also loads on Childhood Attachment, has a strong loading on F3 (MOVES = .84). The PBI has a weak loading on F3 (-.04) and CLAD has a moderate loading on F3 (.35). The residual for MOVES is reported above, while the other two residuals for the variables identifying F3 - CLAD (.95) and PBI (.99) - are large but do have loadings on F3. The overall model as well as the pattern of coefficients fits the data very well as indicated by the CFI and average standardized residuals.

The model in Figure 1 indicates that the three latent variables of Isolation (F3), Abuse (F1), and Childhood Attachment (F2) are all intercorrelated and the critical path links F2 to psychopathologic outcomes. First, the intercorrelations between F1, F2, and F3 are all significant (-.29, -.33, .24, $p<.05$ - see Figure 1). The negative correlations merely reflect the inverted scales of Social Isolation relative to Attachment and Abuse. It is important to note that the crucial path coefficient from F2 to psychopathology is significant ($r=-.48$, $p<.001$). Accordingly, the model is supported by the data and in turn supports the central role of childhood attachment in developmental psychopathology. Thus, the data strongly support both the overall model and the particulars of the predicted relationships as well.

4.6 Computer Interaction Evaluation

In this section, the findings regarding the evaluations which the adolescents completed concerning their experience in using the computer to complete the questionnaires are reported. A copy of the questionnaire is displayed in Appendix B. This section addresses five of the questions from the computer interaction evaluation questionnaire (see Appendix B). Question five on the computer interaction evaluation was not included in the analysis. The reason for exclusion is that the content, which asked the adolescents how threatening they found the computer to be was very close in content to question four, which asked about their comfort level in using the computer as it was programmed. Since the data are nominal, chi-square analyses were conducted to compare the responses of subjects to the same questions.

Significantly more adolescents replied that the screens were easy to read as opposed to them being difficult or very difficult to read

($\chi^2(2) = 120.99$, $p<.001$). Significantly more adolescents also replied that the computer was easy to use as opposed to the computer being difficult or very difficult to use ($\chi^2(1) = 128.12$, $p<.001$). This result must be interpreted with caution, however, as the programming was done by the researcher and was programmed specifically to be "user friendly". Therefore, it is likely that the subjects were responding that the program was user friendly rather than that the computer was easy to use. Further study is required to clarify this question.

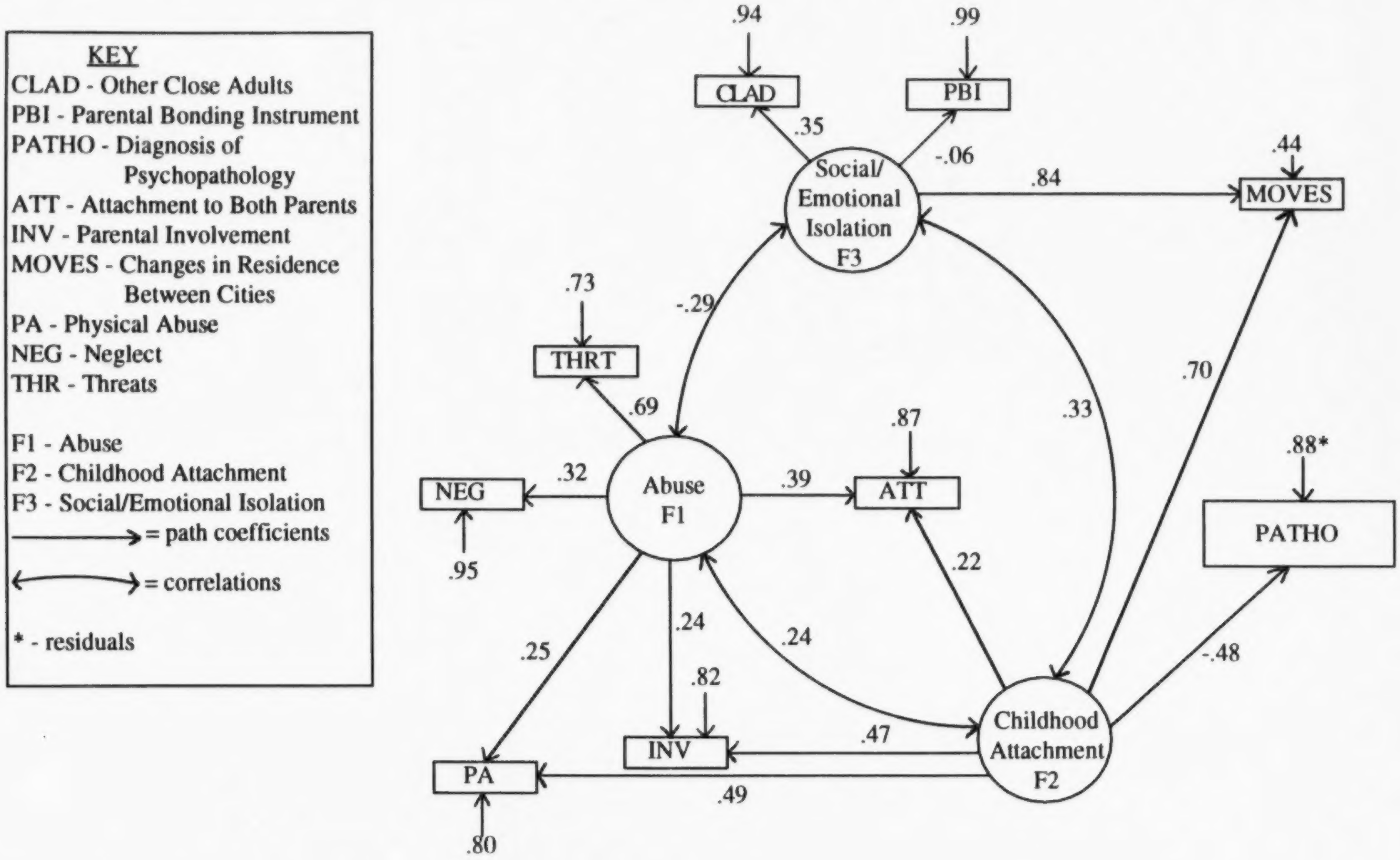
Significantly more adolescents replied that it was easy to answer honestly on the computer than replied that the computer was difficult or very difficult to answer honestly on ($\chi^2(2) = 116.18$, $p<.001$). In fact, none of the subjects found it very difficult to answer honestly on the computer.

Significantly more adolescents replied that they were comfortable using the computer than replied that they were uncomfortable or very uncomfortable using the computer ($\chi^2(1) = 98.94$, $p<.001$). In fact, none of the subjects reported that they were very uncomfortable using the computer as it was programmed. As discussed in the section outlining the ease of using computers, this question may be measuring the computer interface rather than the use of computer itself.

Before presenting the results in this section, it is important to note that gender, number of repeated grades, and socioeconomic status for all subjects were all nonsignificant in their relationship to their preference for choosing the computer, paper and pencil questionnaires, or personal interviews with which to be asked questions.

In responding to which of the three modes of being asked questions, significantly more adolescents preferred the computer rather than paper and pencil format or personal interviews ($\chi^2(2) = 110.6$; $p<.001$).

Figure 1. A Latent Variable Path Model of Psychopathology Estimated by Arbitrary Distribution Least Squares


KEY
CLAD - Other Close Adults
PBI - Parental Bonding Instrument
PATHO - Diagnosis of Psychopathology
ATT - Attachment to Both Parents
INV - Parental Involvement
MOVES - Changes in Residence Between Cities
PA - Physical Abuse
NEG - Neglect
THR - Threats
F1 - Abuse
F2 - Childhood Attachment
F3 - Social/Emotional Isolation
= path coefficients
= correlations
* - residuals
.94
.99
CLAD
PBI
.35
-.06
Social/ Emotional Isolation F3
.44
.84
MOVES
.73
-.29
THRT
.70
.33
.87
.69
.88*
NEG
.32
Abuse F1
.39
ATT
PATHO
.95
.22
.24
.24
.25
.82
-.48
.47
INV
Childhood Attachment F2
PA
.49
.80

CHAPTER 5

DISCUSSION

5.1 Summary of the Findings

The main findings of the present study may be summarized as follows: 1) The latent variable path model indicated an excellent overall fit to the data as was indicated by the CFI and average standardized residuals, 2) The psychometric properties of the AAS established this instrument as reliable and with promising validity, 3) Specific experiences in childhood did not reliably predict the type of pathology demonstrated by children in adolescence, 4) a number of variables (regular nonparental care, neglect, felt rejection, physical abuse, parental proximity, parents blaming children, threats, sexual abuse, family instability) were significantly related to the development of childhood attachment, and 5) subjects, regardless of age or sex, found the computer easy to use and significantly more often preferred completing questionnaires on the computer over both paper and pencil and personal interview methods of gathering data.

5.2 Psychometric Properties

Internal consistency using Cronbach's alpha was used to assess the reliability of the AAS. Results indicated high levels of reliability on each variable measured by the AAS. Psychometric properties of the AAS for the main study are reported in Appendix C.

The evidence for the validity of the AAS was promising. Significant findings between childhood attachment, as measured by the AAS, and Care and Overprotection, as measured by the PBI, as well as maladaptive behaviour in adolescence provided evidence of the concurrent criterion validity of the AAS. Convergent and discriminant validity was also determined as the attachment scale of the AAS was positively and significantly related with the Care scale of the PBI, negatively and significantly correlated with the Overprotection scale of the PBI and insecure attachment was significantly related to maladaptive behaviour. Although these findings indicate that the AAS has promising validity, further study is require to verify the results reported here.

Overall, the AAS was found to be a useful instrument for research with adolescents.

5.3 Attachment and Psychopathology

Taken together, the results of the latent variable path analysis, discriminant analysis, and univariate analyses support the contention that childhood attachment is central to the development of psychological adjustment in adolescence and perhaps beyond. Accordingly, the present results provide support for the contentions of Ainsworth (1972, 1989, 1991), Bowlby (1969, 1983, 1991) and others (Bretherton, 1991; Cicchetti, 1987; Grossman & Grossman, 1991; Sroufe, 1988) that childhood attachment provides the prototypes for later psychological development. In the latent variable path analysis results, for example, childhood attachments directly influence level of adjustment in adolescence. Moreover, the two latent psychological processes of social and emotional isolation and abuse mutually and reciprocally influence each other and the development of attachment. It is likely that these reciprocal dynamic interactions are established early in life (probably in the first year - Ainsworth 1969; Bell & Ainsworth, 1972; Sroufe, 1988) and continue throughout development into adolescence and beyond. Thus these initial interactions solidify and become central to social-emotional adaptation in childhood, adolescence and beyond. Childhood attachment, generally, and in the present study, is influenced by a multiplicity of factors that are discussed below.

5.3.1 Separation. Regular nonparental care was found to be significantly related to insecure attachment. There has been considerable debate on the effects of day care and nonparental care on attachment outcomes (e.g., Belsky & Rovine, 1988). Although the present findings support the notion that regular nonparental care in early childhood is a risk factor for the development of insecure attachment, further study is required. The age range was broad (birth to five years), and it would be appropriate for further study to break down the ages into infant (birth to 18 months) toddler (18 months to 36 months) and early childhood (36 months to 60 months) nonparental care. This would allow for the phases of development of attachment, discussed in chapter two, as well as the cognitive development of children to be considered when results are being analyzed. It would also allow for a more detailed analysis of the effects of nonparental care at various ages. In a recent meta-analysis of published studies, Violato and Russell (1994) concluded that regular nonparental care during infancy and early childhood does significantly increase the likelihood of the development of insecure attachment. The findings in the present study indicated that it was separation from parents in infancy and early childhood that was related to insecure attachment and not the place or type of care received by children when they were separated from their parents.

Separation from both parents for a period of four or more weeks for reasons of family stress was also related to insecure attachment. From an attachment perspective, children naturally seek out the safety of their parents at times of stress. When stress occurs within the family and children are separated from both parents as a result, the children are unable to seek out the safe haven of their parents and consequently their emotional security may be threatened (Bowlby, 1973).

Interestingly, separation from either parent for a period of more than one week was found to be a significant risk for insecure attachment. One reason for this may be that when parents are together they can share in the requirements and responsibilities of parenting and having both parents present may be a stabilizing force within the family unit. When one parent is away, the stress level of the other parent rises as they are placed in a the position of working for two people and the combined effort is lost.

Permanent separation from either or both parents was found to be a significant risk factor for insecure attachment. This is consistent with the theory of attachment (e.g., Bowlby, 1982) as children naturally seek out their parents, and when they do not have access to either or both parents on a permanent basis, this threatens the security of their working models with those figures. Also, with the turmoil experienced when parents are lost or permanent separation occurs for other reasons, children are likely to be traumatized as the very sources from whom they desire to seek protection and security are permanently absent.

5.3.2 Neglect. Regular felt rejection from either or both parents was clearly demonstrated as a significant risk factor for insecure attachment. This finding is theoretically consistent as when children feel rejected from their source of security, they are likely to question the availability of that parent or parents as providers of a secure emotional base (Bowlby, 1982). Hence, children will be less likely to approach their parents in times of need and will likely not achieve security in attachment.

Regular withholding of love from children and regular ridicule of children were each found to be a significant risk factor in relation to the father only. One possible reason for these findings is that very few children felt that their mothers and their parents together regularly withheld their love from them. The results for fathers only is theoretically consistent as when fathers withhold love from or ridicule their children on a regular basis, the children may question their own worth (Bowlby, 1982) as well as the availability of their attachment figures. This combination of issues is likely to produce a threat to the children's internal working models of both themselves and themselves in relation to their primary caregivers (Sroufe, 1988).

5.3.3 Parental involvement. Emotional support, parental affection, and physical proximity were all significantly related to attachment security. For the latter two variables, findings related to fathers only were significant. Regular levels of parental involvement being significantly related to secure attachment is theoretically consistent because when parents are available, loving, supportive, and affectionate with their children, the children learn that they are able to access their parents when needed and their parents will accept and support the children. These experiences are necessary for children to develop internal representations of themselves and themselves in relation to their parents that are safe and secure in nature (Sroufe, 1988). Therefore, regular parental proximity, emotional support, and affection are involved in an important way in the development of a secure emotional base.

5.3.4 Blame. Parents individually blaming their children for parental illness being significantly related to insecure attachment was another theoretically consistent finding. In such circumstances, the likelihood for emotional panic, confusion, and self-degradation may be high. When children are seen as causing illness to the very people they depend on for the establishment of emotional security, it is possible that the children feel guilt and are less likely to further burden their attachment figures when the children are in need.

5.3.5 Threats. From the findings on threats, it appears that the threats of actions may be as emotionally confusing and damaging as actual behaviours. Each of the threats examined in the present study, that is, abandonment, self harm and physical abuse, were significant in their relationship to attachment. In the face of these types of threats, it is possible that children are torn between feelings of desire to approach their parents and use them as a secure base and feelings of fear of the threats turning to reality. It is at times such as this that children are likely to then be emotionally confused. Also, this type of situation may be compounded by a feeling of rejection by the attachment figure which, as discussed earlier, would add to the risk of development of insecure internal representations. Further study is required to examine the relationship between threats and attachment.

5.3.6 Physical abuse. Physical abuse was found to be a significant risk to attachment security, regardless of who perpetrated the physical abuse. This finding underscores the importance of the parental involvement findings. When experiences such as physical abuse are endured outside of the nuclear family, the availability of the parents to their children may increase the likelihood of the children using their parents as a base of support at this time of stress. If the children can and do use the parents as their base to return to, the children may have a better chance of not losing or reestablishing their emotional security and dealing with and understanding their experiences from the safety of their home rather than in isolation. With the increased involvement of parents, the likelihood of continued or further abuse may also be diminished.

5.3.7 Sexual abuse. Sexual abuse was divided into specific behaviours so it could be broken down and studied in detail rather than as a general concept. Each of the behaviours examined were found to be significant risk factors in developing insecure attachment. These behaviours were: 1) showing pornographic magazines to children, 2) talking to children in a sexual manner, and 3) showing one's sex parts to children.

Contact sexual abuse was significant in its relation to insecure attachment. These findings are theoretically consistent and important, as is the case with physical abuse, because the abusive experience provides a clear risk to attachment security regardless of whether or not the perpetrator of the abuse is an attachment figure for that child. Other researchers have reported similar findings (Beitchman, Zucker, Hood, da Dosta, Akman, & Cassavia, 1992). This variable again underscores the importance of the findings regarding the parental involvement variables.

5.3.8 Socioeconomic status. Socioeconomic status was not significantly related to attachment security. This is theoretically consistent as attachment is expected to develop regardless of the financial circumstances of the family. Therefore, when isolated as a variable, socioeconomic status should not, theoretically, influence attachment.

5.3.9 Moves. Moving more than three times between cities or towns before children reach the age of 10 years was significantly related to insecure attachment. The reason for this is possibly that as the family moves many times, intrafamilial instability increases, which may result in insecure attachment. This finding is in concordance with other research data which demonstrates that intrafamilial instability produces a general risk factor to children's adjustment including attachment (Bagley & Genuis, 1991)

One other finding from the univariate analysis was that children were attached in a similar fashion (secure or insecure) to both of their parents. Attachment to both parents was significantly related to overall attachment (r = .98, p<.001). Attachment to father only was also significantly related to attachment (r = .97, p<.001), as was attachment to mother only (r = .54, p<.001). The significant findings indicated that children were similarly attached to both parents. That is, children were either securely attached to both parents or insecurely attached to both parents. Although this finding is not conclusive in isolation, it is consistent with the results of a recent meta-analysis examining attachment to parents (Fox et al., 1991).

5.4 Multivariate Results (Stepwise Discriminant Analysis)

The results of the multivariate analyses further help to integrate the particular findings of the present study. The multivariate findings discussed in this section are results of the Stepwise discriminant analysis used to verify diagnosis.

This stepwise discriminant analysis was undertaken to evaluate the validity of the diagnosis of psychopathology for the adolescent subjects. The goal was to derive a discriminant function to distinguish between the clinical and non-clinical groups. A single discriminant function containing four variables [(1) total problem score of the CBCL from fathers, (2) total problem score of the CBCL from mothers, (3) internalizing from the CBCL from fathers, and (4) total problem score from the YSR] produced a canonical correlation, $r = .92$. Also, 97.1 percent of the subjects were correctly classified according to clinical diagnosis, or lack thereof, by employing the derived discriminant function. The findings of this analysis provided strong support for the validity of the psychiatric assessments of clinical psychopathology and therefore enable the confident use of the clinical and contrast groups on all analyses and interpretations.

5.5 Research Questions

Three research questions were proposed in the present study. These are discussed below.

5.5.1 Question one. The first research question focused on the extent to which subjects assessed with insecure attachment in childhood would be significantly more often found to be diagnosed with psychopathology in adolescence. Both multivariate and univariate findings indicated that subjects found to have insecure attachment prior to the age of 10 years were significantly more often diagnosed with psychopathology in adolescence.

5.5.2 Question two. The second research question examined the relative influence of each parent on their children's attachment. In this question it was specifically asked if experiences in childhood predicted attachment style differently as they were experienced in relation to mother, father, or both parents. The overwhelming majority of experiences examined indicated that most of these experiences had the same effect on attachment regardless of the parent involved. There were a few experiences where the influence differed, but the numbers in the analyses were very small and, accordingly, must be interpreted with caution. Further research is required in order to draw firm conclusions about the effect of specific experiences and their relation to each parent on children's attachment.

5.5.3 Question three. The third question asked whether specific psychopathologies (as measured by the YSR) could be predicted by specific childhood experiences already found to be related to attachment security. A stepwise discriminant analysis was used to answer this question. Two nonsignificant functions were derived and subsequent classifications based on these were near chance. Therefore, childhood experiences were shown not to be reliable predictors of the type of psychopathology demonstrated in adolescence. The question as to why there are different types of psychopathology is critical, however, as a multiplicity of psychopathologies are exhibited; how these psychopathologies develop and the specific factors leading to the distinctions in psychopathology are worthy research problems. It may be that ongoing patterns of behaviour within families influence the direction of the children's behaviour along specific developmental pathways (Ainsworth, 1991; Bretherton, 1991; Cicchetti & Howes, 1991; Sroufe, 1988). Further research is required to examine these important issues.

5.6 Evaluation of the Latent Variable Model

Structural equation modelling techniques were utilized in the testing of the latent variable path model proposed in chapter two. This model, depicted in Figure 1, consists of three latent variables (Abuse (F1), Childhood Attachment (F2), and Social/Emotional Isolation (F3)) with attachment having a central role in developmental psychopathology, was strongly supported. A Comparative Fit Index of .984 was produced. This index indicates that about 98% of the variance and covariance in the data was accounted for by the proposed model. The average standardized residuals was .25, which provided further evidence of the excellent fit of the proposed model of developmental psychopathology. The latent variable ABUSE had clear loadings from six relevant variables (Threats, Neglect, Physical Abuse, Moves, Parental Involvement and, Attachment). Some of these also served to identify ATTACHMENT as they had split loadings. The third variable, ISOLATION had three relevant loadings (MOVES, PBI, and CLAD). The overall model fit the data very well as evidenced by the CFI and the average residuals.

There are numerous important implications of these findings as strong supporting evidence for the developmental nature of psychopathology was provided. The reciprocal causal relationship between behavioural experiences in childhood and the security of emotional attachment is evidenced by both the loadings of observed variables on to the latent attachment variable, and the significant correlations found between attachment and the other two latent variables, ABUSE and ISOLATION. Although the various childhood experiences affect attachment security and the development of attachment type affects both the experiential and interpretive components of subsequent experiences, CHILDHOOD ATTACHMENT was the link leading to adolescent psychopathology. Since a large proportion of the variance and covariance of the data was accounted for (>98%), it is appropriate to consider the main factor of adolescent psychopathology to be rooted in disruptions in childhood attachment, the development of which was also somewhat clarified in the present study.

The terms “causality” and “causal models” are often used in relation to structural equation modelling and need to be addressed in light of the present findings. Is it appropriate to say that childhood experiences cause disruption in attachment security, which, in turn, cause adolescent psychopathology?

Bollen (1989) identified three requirements for the establishment of causality: 1) Isolation, 2) Association, and 3) Direction of influence. Each of these requirements are discussed below in the context of the present study.

5.6.1 Isolation. Although isolation is an unattainable ideal, as it exists only when variables are in a “vacuum” that is exclusive from all other influences, Bollen (1989) argued that we rely on pseudo-isolation of variables in order to meet sufficiently the requirements for causality. As a result, it is impossible to make absolutely definitive statements regarding causality. This does not mean, however, that causality cannot be examined as long as the realization of the tentativeness of any claims for a casual relation are maintained while striving to eliminate as many threats to pseudo-isolation as possible (Bollen, 1989, p. 56). The assumption of pseudo-isolation was made in the present study. Bollen (1989) argued that the way such an assumption is made is through assuming that the composite of all omitted determinants is uncorrelated with the exogenous variables of the equation. The variables included in the present study were extracted from a thorough review of the empirical and theoretical literature, and subsequently exposed to detailed univariate analysis prior to their inclusion into the latent variable path analysis. Therefore, a thorough list of possible influential variables was included and the assumption of the composite of the omitted determinants being uncorrelated with the exogenous variables in the equation was made. Accordingly, the criteria of pseudo-isolation were met (Bollen, 1989).

5.6.2 Association. Association is the second condition necessary for establishing causality. Bollen (1989) argued that when two variables are pseudo-isolated, the causal variable should be associated with an effect. In the present study, the associations between both the observed variables and the latent variables as well as between the latent variables are all present. The associations are all moderate or large with the exception of the observed variable PBI with the latent variable ISOLATION ($r = -.06$). Therefore, the condition of association was met.

5.6.3 Direction of causation. Bollen (1989) argued that causal direction must be established in order for the claim of causality to be plausible. Knowing that one variable precedes another in time is the single most effective means of establishing the direction of cause. This is not always the case, however, as, for example, present behaviours can be caused by the expectation or anticipation of future events. Therefore, theoretical and empirical support is required for the claim of direction of causation as well as the relative time that events occur.

In the present study there are two levels of causation that are to be examined and the direction of causation must be established for both separately. The first is the relationship between childhood experiences (F1 and F3) and childhood attachment. The other is the relationship between childhood attachment and psychopathology.

In establishing the direction of causality for the latent variables, Chapter 2 provided the theoretical base establishing the direction of childhood experiences leading to subsequent secure or insecure attachment, which then becomes a circular phenomenon in some respects. The cycle can be affected by external sources however, as experiences existing prior to the development of insecure attachment may well persist with the influence of the children once insecure attachment has been developed. Therefore, once children have developed attachment insecurity they are more likely to behave in ways and interpret experiences in a manner that will further reinforce their insecurity. Experiences over which the children had little or no control, however, led to the initial development of their attachment style. Thus, the direction of influence going from childhood experiences (F1 and F3) to the latent variable of CHILDHOOD ATTACHMENT (F2) is supported.

The directional influence of CHILDHOOD ATTACHMENT to adolescent psychopathology is also supported in the present study. Primarily, the attachment was measured for subjects prior to the age of 10 years and psychopathology was measured in the present, with subjects ranging in age from 12 to 17 years. The existence of the attachment type prior to age 10 years and its association with psychopathology in adolescence is an argument for the direction of causation from childhood attachment to adolescent psychopathology. The coexistence or even prior existence of psychopathology to attachment cannot be ruled out, however. Psychopathology could have been manifested in childhood in many of these subjects and so the actual direction of influence between attachment and psychopathology is open to question. Sixty percent of the adolescent subjects in the sample have never had a psychiatric diagnosis in the clinical range. Therefore, for these subjects, attachment would have to have preceded psychological adaptation in adolescence. Based on this, it is appropriate to view the direction of influence from attachment to psychological adaptation (psychopathology) in the rest of the sample as it is unknown when the psychopathology in the clinical subjects was first present. Also, the findings from Bell and Ainsworth (1972) that caregiver behaviour has a dramatic effect on infant behaviour over the course of the first year of life, support the interpretation that attachment security, which is an intrapersonal construct developed in interpersonal relationships with parents, precedes the development of psychopathology.

Based on the preceding discussion, the three requisites for causality have been met for both the causing of attachment type based on childhood experiences and the development of psychopathology being caused by disrupted attachment. Although a conclusive cause has not been determined as further variables may be added to improve the model and explain further the development of psychopathology, it is nevertheless appropriate to interpret the findings of the latent variable path analysis as demonstrating a causal model of developmental psychopathology.

5.7 Computer Interaction Scale

In an effort to gain a further understanding of the preferences of subjects in gathering data and to replicate a similar study conducted in 1991 (Bagley & Genuis, 1991), a computer interaction scale was administered in the present study. In the initial study, the computer was preferred for data collection by significantly more subjects than both personal interview and paper and pencil formats for data collection. In the present study, five questions were examined on the use of the computer for data collection, and comparing computers to personal interviews or paper and pencil formats.

Results demonstrated strong support for the use of computers in data collection. Significantly more subjects answered that they found the computer screens were easy to read, the questionnaires were easy to complete, subjects found it easy to answer honestly on the computer (which is an important finding as considerable personal information was obtained in both the present and 1991, Bagley and Genuis study), and subjects were comfortable using the computer for the purpose of data collection. This last finding is also relevant as included in the sample was a wide variety of subjects with varying degrees of computer experience and initial comfort level. Accordingly, even when subjects were initially hesitant to use the computer they found that they were comfortable once they began using the computer for data collection.

In comparing user preference, significantly more subjects preferred using the computer for data collection over both the personal interview and paper and pencil methods. This question was asked of each adolescent subject. These findings indicated that the computer is an efficient and preferred method of collecting data, and may reduce the risk of underreporting for subjects providing data in very personal areas, such as child sexual abuse. Considering the present work was a replication and expansion of a previous study and the findings from both projects provided strong support for the use of well designed, user friendly software for data collection, it is appropriate to expand the investigation. The present and past findings raise questions about both traditional paper and pencil methods of data collection and newer personal interview methods used in qualitative research. Further studies collecting data using the three methods for all subjects and gathering parallel data using each method is warranted in order to support of refute the present findings.

5.8 Limitations of the Study

The present study was an attempt to examine some specific issues dealing with the long-term consequences of attachment security in childhood. The most pertinent of these issues was testing a causal model of developmental psychopathology. As well as the issues surrounding attachment, the methodological question of the use of computers for data collection was examined. The study was conducted with the intention of providing this area of research with an expanded data base from which to draw and learn. While several important findings and conclusions were summarized above, there are a number of limitations to the present study.

First, although the instruments used in the present study were found to be highly reliable and with evidence of substantial validity, the fact remains that the data collected were retrospective in nature. Such variables are subjective in nature and call upon the subjects to relate their experience of events that have occurred or that they have perceived to have occurred in their lives. Accordingly, limitations of memory reconstruction, timing of events and honesty are salient in the data. Ultimately, prospective longitudinal or cross-sequential designs are required to further substantiate the present results.

Second, many of the variables in the present study were categorical when theoretically they could be continuous. Examples of these variables are parental support, felt rejection, and withheld love. The consequence of reducing such continuous variables to categorical status is that the error of measurement is increased because a lower order of scale is used when a higher order would be more appropriate (Crocker & Algina, 1986).

Third, the sample size of the present study was adequate for the analysis conducted, but given the nature of the multivariate analyses (Stepwise Discriminant Analysis, and Latent Variable Path Analysis), a larger sample would have provided more conclusive results.

Fourth, the present study examined only secure and insecure attachment. Further work should expand on this so as to include the various forms of insecure attachment identified in previous research (i.e., ambivalent, disorganized, avoidant).

Fifth, the results of the Latent Variable Path Analysis as well as the other findings in the study are significant and clear. However, this is an overall result and from this, numerous particulars need to be worked out. The following particulars are noteworthy: 1) Although a causal path has been identified from disrupted attachment to psychopathology, there may be cases where insecure attachment does not end in psychopathology. Considering the causal finding reported here, these cases warrant investigation. It may be that, as Vaughn et al., (1979) found, the quality of attachment, even with the same caregiver, is subject to change when the life stress of the attachment figures changes. This is theoretically consistent considering the nature of the sensitive period lasting throughout the developmental years of childhood and adolescence. Future research is warranted to examine such a position in detail. 2) In the present study stipulations were presented for inclusion into the study. This was done in order to increase the likelihood of having diverse groups of subjects. Further study would benefit from including a more representative portion of the population in order to examine more subtle differences and to test the model with groups that are not so clearly different. Generalization would be made with increased confidence if the results were upheld in such a replication. 3) Two of the variables loading on to social isolation had very high residuals. Further study to examine the place of isolation in the model would be beneficial. The variable Moves was clear in its influence on social isolation, but the others also loaded on to the latent variable. 4) The impact of sexual abuse was not clear in the model. This was likely the case because of presence of other forms of abuse and sexual abuse as a variable may have been redundant. Another possibility is that sexual abuse was not clearly measured. The presentation of the question of sexual abuse may have contributed to its lack of inclusion in the model. It may have been more efficacious to ask directly about unwanted sexual contact prior to the age of 10 years rather than asking about sexual contact and then in a separate question, asking if such contact was ever not desired by the subject. Asking the question in this manner may have increased the clarity for the subjects. 5) Subsequent research examining how the variables within the present model work interactively and dynamically over time, and how this interaction affects the model as a whole, is warranted. 6) The stepwise discriminant analysis conducted which examined the ability to predict type of psychopathology based on childhood experiences provided an interesting and important finding. Although the type of psychopathology demonstrated was not predicted by specific childhood experiences examined in the present study (which were extracted through extensive study of previous research and theory), the fact remains that varying manifestations of psychopathology exist. Further research is required to examine this issue further and perhaps explicate the developmental pathways that result in various types of psychopathology.

5.9 General Summary and Conclusions

The study of attachment has focused mainly on early childhood, with recent inquiries examining adults. The methods for data collection with older adolescents and adults has mainly been with structured personal interviews and paper and pencil questionnaires. The present study attempted to examine the influence of attachment security, developed prior to the age of 10 years, on emotional and psychological development into adolescence. Based on previous findings, the present research incorporated data in an increasingly efficacious and efficient manner. Although some of the findings from the present study are intriguing and warrant serious consideration (lack of specificity of early experiences on type of psychopathology), further research is warranted to examine the extent to which the present findings can be replicated. The results from the present study provide a strong basis from which further work may be conducted and the questions raised from the results provide much direction for subsequent investigation.

Seven important findings from the present study may be reiterated as follows: 1) Certain childhood experiences summarized as isolation and abuse are causally related to the development of insecure attachment. 2) Insecure attachment is causally related to the demonstration of adolescent psychopathology. 3) The form of psychopathology exhibited is not predictable from the specific experiences that person had in childhood. 4) Numerous identified variables are significant in their relationship to attachment security, indicating that familial relationships have a strong impact on developmental psychopathology. 5) The experience of child abuse, emotional, physical, or sexual is a risk factor in the development of insecure attachment regardless of whether or not the perpetrator of such abuse is the attachment figure. 6) Childhood attachment can be reliably and validly measured in a retrospective manner, using the AAS, and 7) the use of computers in the collection of data is preferred by subjects of all ages and both genders, regardless of their prior experience or feelings regarding computers.

The main finding in the present thesis suggests that childhood attachment plays a central and causal role in the development of adolescent psychopathology and probably beyond. While such a role for attachment has long been suspected, it has been strongly demonstrated in the present thesis. While much more work is required to work out the particulars, the latent variable path model in the present study provides a simple and parsimonious theory of developmental psychopathology.

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Appendix A

General information given to parents over the telephone regarding the research study.

INTRODUCTION

Thank you for considering taking part in this study. We are interviewing a sample of adolescents and their parents asking about events which have occurred in the child's life before the age of 10 years. We are also focusing on current functioning and adjustment.

All information given will be treated in the strictest confidence, and your names will not be reported anywhere.

While the interview is not specifically designed to be of direct benefit to you psychologically, you may find it interesting to complete and the results may assist the design of programs aimed at helping children and adolescents at various levels of prevention.

If for any reason you decide that you would prefer not to continue participation in the study, you may withdraw. This includes withdrawing after you have begun filling out the questionnaire.

Lastly, if you have any questions or would like to talk at all while you are completing the questionnaire, you are free to discuss it with myself who will be present in an adjacent room.

Appendix B

Computer Interaction Evaluation.

COMPUTER INTERACTION EVALUATION

	Very Easy				Very Difficult
1. How easy or difficult did you find the screens to read?	1	2	3	4	5
2. How easy or difficult did you find the computer to use?	1	2	3	4	5
3. How easy or difficult did you find it to answer honestly on the computer?	1	2	3	4	5

	Very Comfortable				Very Uncomfortable
4. How comfortable or uncomfortable were you using the computer?	1	2	3	4	5

	Not Threatening				Very Threatening
5. How threatening did you find the computer to respond to?	1	2	3	4	5

6. Please indicate, by number, your order of preference in responding to questionnaires (1=most preferred, 3=least preferred).

____Computer

____Paper and Pencil

____Personal Interview

7. Additional Comments:

THANK YOU FOR YOUR COOPERATION

Appendix C

Psychometric Properties of the AAS

The findings relating to the reliability and validity of the AAS as assessed with the total sample (138 adolescents) of subjects is presented below. This appendix is divided into three sections. These are: (1) Descriptive characteristics of attachment as measured with the AAS, (2) Reliability of the AAS, (3) Validity of the AAS.

Descriptive Characteristics of Attachment as Measured with the AAS

The method of measuring attachment in the main study was held constant from the pilot study. This means that for the adolescents, attachment was measured by having them select a total of 15 words to describe their relationship with each of their mother, father, and both parents together. The words were selected from a list of 21 possible choices for each and the same selections were available for each of the parental combinations. Table 1 contains a list of the choices available to each subject (items 41 through 55). Responses provided were evaluated in the same manner as was discussed for the pilot study. As discussed in chapter three, the cutoff score for the adolescent subjects was 26.

Reliability of the AAS

As seen in Table 17, each variable has an alpha level of greater than .80. These high alpha values are an indication of the adequate reliability of the AAS.

Validity Evidence for the AAS

The validity evidence for the AAS was established following the procedures discussed in chapter three.

Criterion-related validity. Attachment as measured with the AAS, was positively and significantly correlated with care as measured by the PBI ($r = .21$, $p < .05$). Attachment was also negatively and significantly correlated with overprotection ($r = -.25$, $p < .01$). These findings supported the concurrent criterion-related validity of the attachment scale in the AAS as it

Table 17

Reliability of the Adolescent Attachment Survey and the Adolescent Subscales

Variable	Number of Items	Mean	Standard Deviation	Alpha Values
Attachment	15	70.14	35.46	.90
Separation	29	24.15	18.70	.83
Neglect	30	21.36	16.64	.92
Parental Involvement	14	41.05	7.78	.84
Blame	12	5.81	7.11	.94
Threats	36	15.65	14.75	.94
Physical Abuse	6	9.10	14.92	.87
Sexual Abuse	23	18.38	18.23	.82

was meant to positively correlate with parental care and negatively with parental overprotection.

Further investigations of the criterion related validity of the attachment scale of the AAS were conducted by relating secure and insecure attachment to the Internalizing, Externalizing, and Total Problem scales of the YSR.

As shown in Table 18, secure attachment was significantly related with each of the internalizing ($\chi^2(1) = 10.30$, $p<.01$), externalizing ($\chi^2(1) = 18.28$, $p<.001$), and the total problem scores ($\chi^2(1) = 5.63$, $p<.05$) by subjects. This finding demonstrated a significant relationship between attachment type in childhood (secure versus insecure) and clinically maladaptive behaviour in adolescence. The pattern of results did converge and suggested further evidence for the concurrent criterion-related validity of the AAS as a measure of attachment.

As discussed earlier, attachment was assessed in three components, with both parents in mind, father only, and mother only. Attachment as measured with the AAS could therefore be divided into attachment to both parents, attachment to father, and attachment to mother. Analyses demonstrated that attachment to both parents was significantly related to overall attachment ($r = .98$, $p<.001$), attachment to father only was significantly related to attachment ($r = .97$, $p<.001$), and attachment to mother only was significantly related to attachment ($r = .54$, $p<.001$).

The significant findings between overall attachment and attachment to each parent separately, insecure attachment and clinically maladaptive behaviour, and between each strand of attachment and overall attachment, care, and overprotection provided evidence for the concurrent criterion-related validity of the AAS.

Table 18

Childhood Attachment and the Youth Self Report Subscales

YSR Subscale	Group	Secure n[a]	Secure (%)[b]	Insecure n[a]	Insecure (%)[b]
1. Internalizing**	Normal	81	(78.6)	22	(21.4)
	Clinical	17	(50.0)	17	(50.0)
2. Externalizing***	Normal	95	(92.2)	8	(7.8)
	Clinical	21	(61.8)	13	(38.2)
3. Total Problem* Score	Normal	48	(46.6)	55	(53.4)
	Clinical	8	(23.5)	26	(76.5)

Attachment

[a] Number of subjects in this category

[b] Percentage of subjects in this category

* p<.05; ** p<.01; ***p<.001

Discussion

As little work has been done to assess the long-term effects of childhood attachment, and no adequate instrument has yet been developed, it was necessary to develop and test an instrument aimed at assessing and examining the long-term effects of secure or insecure childhood attachment. The Pilot Study was aimed at establishing the psychometric properties of the AAS. These properties were re-evaluated in the main study.

Adequate internal consistency indicators, using Cronbach's alpha, were found for all of the variables used in the questionnaire. Criterion-related validity coefficients for the attachment scale in the AAS were consistent and significant. The psychometric properties established for the AAS indicated that it is a valid and reliable instrument.

Appendix D

Latent Variable Path Analysis Control File.

Program control information

```
/TITLE
LVPA OF DEVELOPMENTAL PSYCHOPATHOLOGY
/SPECIFICATIONS
CASES=138;  VARIABLES=9;  MATRIX=CORRELATIONS’  ME=GLS;
/LABLES
V1=CHATT;  V2=PBITO;  V3=DIAGA;
V4=CLSAD;  V5=PRINV;  V6=NEGLT;  V7=THRET;  V8=PABSE;
V9=MOVES;  F1=ABUSE;  F2=MYAT;  F3=XFMLY;
/EQUATIONS
V1 = 1*F2 + F1 + E1;
V2 = 1*F3 + E2;
V3 = 1*F2 + E3;
V4 = F3 + E4;
V5 = F2 + F1 + E5;
V6 = F1 + E6;
V7 = F1 + E7;
V8 = F1 + F2 + E8;
V9 = F2 + F3 + E9;
/VARIANCES
E1 TO E9 = 1*;
D1 TO D3 = 1*;
/COVARIANCES
F1,F2 = .3*;
F2,F3 = .3*;
F1,F3 = .3*;
/MATRIX
1.00
 .03   1.00
 .49    .18   1.00
-.51   -.13   -.32   1.00
 .85    .12    .46   -.46   1.00
 .11   -.18   -.15    .08    .15   1.00
 .13    .00   -.14   -.03    .20    .60   1.00
-.40   -.09   -.51    .30   -.26    .34    .24   1.00
-.35   -.13   -.45    .42   -.29    .15    .05    .42   1.00
/STANDARD DEVIATIONS
5.8  6.4  4.9  6.9  7.9  4.1  1.6  4.4  2.7
/LMTEST
/WTEST
/END
```